

AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT				1. CONTRACT ID CODE J		PAGE OF PAGES 1 2	
2. AMENDMENT/MODIFICATION NO. 0004		3. EFFECTIVE DATE 26-Jun-2007		4. REQUISITION/PURCHASE REQ. NO.		5. PROJECT NO. (If applicable)	
6. ISSUED BY US ARMY CORPS OF ENGINEERS-CETAC-CT TRANSATLANTIC PROG. CNTR, CETAC-CT PO BOX 2250 WINCHESTER VA 22604-1450		CODE W912ER		7. ADMINISTERED BY (If other than item 6) See Item 6		CODE	
8. NAME AND ADDRESS OF CONTRACTOR (No., Street, County, State and Zip Code)				X		9A. AMENDMENT OF SOLICITATION NO. W917PM-07-R-0105	
				X		9B. DATED (SEE ITEM 11) 21-May-2007	
						10A. MOD. OF CONTRACT/ORDER NO.	
						10B. DATED (SEE ITEM 13)	
CODE		FACILITY CODE					
11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS							
<input checked="" type="checkbox"/> The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offer <input type="checkbox"/> is extended, <input checked="" type="checkbox"/> is not extended.							
<p>Offer must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended by one of the following methods:</p> <p>(a) By completing Items 8 and 15, and returning _____ copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.</p>							
12. ACCOUNTING AND APPROPRIATION DATA (If required)							
13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACT ORDERS. IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.							
A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: (Specify authority) THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.							
B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES (such as changes in paying office, appropriation date, etc.) SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(B).							
C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:							
D. OTHER (Specify type of modification and authority)							
E. IMPORTANT: Contractor <input type="checkbox"/> is not, <input type="checkbox"/> is required to sign this document and return _____ copies to the issuing office.							
14. DESCRIPTION OF AMENDMENT/MODIFICATION (Organized by UCF section headings, including solicitation/contract subject matter where feasible.)							
<p>Amendment 0004 is issued to revise the specifications in the Sample Task Order.</p> <p>The following changes were made:</p> <p>Section 01010:</p> <p>Revised paragraph 1.5</p> <p>Revised paragraph 2.10b</p> <p>Revised paragraph 2.10h</p> <p>Revised paragraph 2.10i</p> <p>Revised paragraph 2.10j</p> <p>Revised paragraph 2.10k</p>							
Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.							
15A. NAME AND TITLE OF SIGNER (Type or print)				16A. NAME AND TITLE OF CONTRACTING OFFICER (Type or print)			
				TEL: _____ EMAIL: _____			
15B. CONTRACTOR/OFFEROR		15C. DATE SIGNED		16B. UNITED STATES OF AMERICA		16C. DATE SIGNED	
(Signature of person authorized to sign)				BY _____		26-Jun-2007	
				(Signature of Contracting Officer)			

SECTION SF 30 BLOCK 14 CONTINUATION PAGE

The following items are applicable to this modification:

07-R-0105

Section 01010 (Cont'd)

Revised paragraph 2.10r
Revised paragraph 2.11g
Revised paragraph 2.11m
Revised paragraph 2.12a
Revised paragraph 2.12g
Revised paragraph 3 table

Section 01015

Revised paragraph 10.4.1.2
Added paragraph 8.4.1
Revised last sentence paragraph 8.5

Section 01060

Revised paragraph 1.2

Section 01335

Revised paragraph 3.7.4

The above Sections are replaced in their entirety.

**SPECIFICATION SECTION 01010
SCOPE OF WORK**

**AFGHAN NATIONAL POLICE - BORDER POLICE COMPANY COMPOUNDS
NIMROZ PROVINCE, AFGHANISTAN**

1. GENERAL

1.1 PROJECT WORK SITES

This project consists of the site adaptation and construction of four Afghan National Police (ANP) Border Police Company Compound facilities in the Khwab Gah, Kung Den Mohammad, Mekakei, and Telaie Districts of Nimroz Province, Afghanistan. This project is defined as the provision by the contractor of all management, material, labor, and equipment, to site adapt, construct and/or refurbish all utilities, roads, buildings, force protection measures, site security, de-mining activities, and other features as referenced herein.

1.2 WORK TO BE PERFORMED

The work shall include site adapting the provided design documentation for construction of the facilities described within the scope of work in accordance with the technical provisions (Section 01015) and provided drawings. The facilities shall include structures as indicated in the SOW, technical provisions, and drawings and contain all necessary utilities for operation of such. All facilities shall be constructed in accordance with current International Building Codes and construction practices promulgated by the national Afghan government. Any standard that can be determined to be substantially equivalent to the standards specified in this document may be used, but it is the Contractor's responsibility to show the equivalency of the alternate standard and the Contracting Officer must approve its use. A partial listing of references is included within the Request for Proposal.

Work at individual projects sites consists of the construction of Company Compound facilities in accordance with the contract documentation. The compound consists of an office facility, barracks/dining facility (DFAC) facility, a maintenance/warehouse facility, a vehicle fuel point, complete perimeter wall with two entry control points (primary and secondary), four guard towers, site electrical (generators, distribution system, and fuel tanks), site water (well and water tank house), site wastewater system (septic tank and drainage field/pond), trash point, roadways, and parking lot. The contractor will insure that all seismic requirements are met in the construction of the facilities.

The contractor is encouraged to use Afghan labor and subcontractors to the maximum extent possible commensurate with technical, security or other requirements or necessary considerations. The intent of this contract is also to use locally procured materials and labor to the maximum extent possible.

1.3 TECHNICAL REQUIREMENTS

Work shall be executed in accordance with the Technical Requirements in Section 01015 and in the drawings. All requirements set forth in the Scope of Work (Section 01010), but not included in the Technical Requirements and/or drawings, shall be considered as set forth in both and vice versa. In case of question or ambiguity, the Contracting Officer (KO) shall make the final decision. The KO shall furnish the decision in writing if requested by the Contractor. Site adaptation of the provided designs shall be approved by the Contracting Officer's Representative (COR) prior to the start of work. The Contractor shall verify all dimensions provided in the scope of work prior to the start of any construction.

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1.4 ENGLISH LANGUAGE REQUIREMENT

All information shall be presented in English. The Contractor shall have a minimum of one English-speaking representative on site at all times when work is in progress.

1.5 PERIOD OF PERFORMANCE

The performance period for this contract shall be 450 calendar days after notice to proceed. Liquidated damages in the amount of \$1977.44 shall be assessed for every calendar day beyond the scheduled contract completion date and charged to the Contractor.

Intermediate milestones and requirements for completion of construction at individual project sites are provided below. The Contractor shall deliver site-specific submittals and construction products according to the following schedule:

- ~~1. 65% Submittal 30 days after NTP.~~
- ~~2. 100% Submittal 14 days after government review of 65% submittal.~~
- ~~3. Final Submittal 14 days after government review of 100% submittal.~~

1. Site Master Plan and Area Use Plan 14 calendar days after NTP
2. 65% Submittal 30 days after NTP.
2. 100% Submittal 14 calendar days after government review of 65% submittal.
3. Final Submittal 14 calendar days after government review of 100% submittal.

The locations of the four Border Police Company Compound sites are as follows:

Construction site Locations

Location (Nimroz Province)	Latitude	Longitude	Elevation
Khwab Gah			
Point 1	30° 47.255' N	61° 45.664' E	1660 feet
Point 2	30° 47.234' N	61° 45.607' E	1662 feet
Point 3	30° 47.339' N	61° 45.587' E	1634 feet
Point 4	30° 47.320' N	61° 45.532' E	1657 feet
Kung Den Mohammad			
Point 1	30° 53.913' N	61° 47.357' E	1608 feet
Point 2	30° 53.905' N	61° 47.409' E	1605 feet
Point 3	30° 53.866' N	61° 47.421' E	1614 feet
Point 4	30° 53.871' N	61° 47.354' E	1608 feet
Mekakei			
Point 1	31° 07.255' N	61° 49.064' E	1581 feet
Point 2	31° 07.288' N	61° 49.048' E	1582 feet
Point 3	31° 07.310' N	61° 49.093' E	1586 feet
Point 4	31° 07.273' N	61° 49.118' E	1581 feet

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Telaei			
Point 1	31° 15.179' N	61° 46.379' E	1558 feet
Point 2	31° 15.137' N	61° 46.382' E	1569 feet
Point 3	31° 15.144' N	61° 46.431' E	1569 feet
Point 4	31° 15.179' N	61° 46.435' E	1560 feet

1.6 SUBMITTALS

Submittals and a Submittal Register are required as specified in Section 01335 of the Basic Contract.

1.7 SITE SECURITY

The Contractor shall provide perimeter force protection security for the developing site. Security may include but is not limited to fence and private security guards. Perimeter security shall prevent unauthorized site access and provide safety protection to the Contractor work force and government personnel for the duration of the project. The Contractor is solely responsible for security, however local police shall be coordinated with regarding security.

2. GENERAL REQUIREMENTS FOR POLICE PROGRAM FACILITIES

All standard construction amenities and details such as heating, lighting, site drainage, utility connections, etc. shall be implied as a construction requirement. Drawings referenced are provided as part of the contract documentation. Walkways are required to connect all buildings, facilities, and features such as parking lots, power plants, etc.

The Contractor shall site adapt and construct the facilities in accordance with the requirements stated in this section (Section 01010 - Scope of Work), in Section 01015 - Technical Requirements, and in the drawings. The site adaptation and construction work shall include but not be limited to the efforts described in the following sub-paragraphs.

2.1 MASTER PLANNING, SITE SPECIFIC SURVEYS & SUBMITTALS

2.1.1 Programmatic Design Charrette: The contractor shall prepare a programmatic Master Site Plan that will be generally applied to all construction locations. The Master Site Plan shall include all locations of construction office/storage containers, laydown and construction debris removal area. The development of the master plan will include participation in a charrette that will be conducted at the Corps of Engineers Headquarters Office in Kabul. The charrette shall be scheduled by the Government to occur within ten (10) calendar days of notice to proceed. The programmatic Master Site Plan shall be submitted to the Government no later than twenty (20) days after Notice to Proceed. Site specific adaptations of the programmatic Master Site Plan shall be submitted to the Government according to the schedule provided above.

2.1.2 Site Specific Surveys & Submittals: For individual construction sites, the Contractor shall perform a geotechnical investigation as defined in Section 01015, perform a topographic survey of the site, adapt the programmatic Master Site Plan to the conditions applicable for specific locations, and prepare a complete grading, landscaping, and site drainage plan with existing grades, proposed grades, and building finished floor elevations based on the technical requirements contained in the Request for Proposal. The Contractor shall not locate facilities in wadis or dry river beds. The finish floor elevation of

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all facilities and slabs shall be above flood elevations or river banks, whichever is at the highest elevation. The contractor will provide drawings and details to describe any adaptations to the standard design that will be required for individual project sites as a site specific submittal as necessary. At a minimum, site specific submittals shall include: the geotechnical investigation report; drawings, details and calculations associated with well construction; and drawings, details and calculations associated with sanitary sewer and leach field construction. The schedule for delivery of site-specific submittals is included above at paragraph 1.5, Period of Performance.

2.2 DE-MINING ACTIVITIES

The contractor shall search, identify and clear all mines and unexploded ordnances (UXOs) from the entire site. The contractor shall provide the government a letter indicating that the site is clear of mines and UXOs and is available for construction operations to proceed. All mine and UXO clearing shall be done in accordance with the International Mine Action Standards (IMAS) and clearance shall be accomplished to the anticipated foundation depth. These standards can be found at <http://www.mineactionstandards.org>. Work shall not commence in any area that has not been cleared. For any and all areas on or around the site, it is the responsibility of the Contractor to be aware of the risk of encountering mines and UXOs and to take all actions necessary to assure a safe work area to perform the requirements of this contract. The Contractor assumes the risk of any and all personal injury, property damage or other liability, arising out of and resulting from any Contractor action hereunder. In any case the Contractor shall be responsible for identifying all mines and UXOs within the entire site. Once the mines and UXOs are identified, the Contractor shall place them in a location in accordance with IMAS. This work shall proceed in phases, concurrently with other construction efforts as determined by the contractor. If a UXO/mine is encountered after site clearance and during project construction, UXO/mine disposal shall be handled in accordance with Section 01015, Technical Requirements. If during the performance of the work under this contract, the Contractor encounters U.S. UXO, the Contractor shall immediately stop work in the area and notify the Contracting Officer.

2.3 DEMOLITION AND GRADING

As applicable, the contractor shall demolish all existing structures and buildings at the site prior to commencement of new work. The Contractor shall remove and dispose of all debris, concrete, and foundations. The Contractor shall verify the location of debris disposal with the Contracting Officer. The Contractor shall perform complete final site grading after installation of all required drainage structures per the Drainage Plan that shall be prepared as part of this project and after installation of any other buried utilities or other project components.

Native crushed stone 100 mm thick shall be placed around all buildings, from the building wall or building landscaping out 2m to reduce erosion and to provide dust control. Existing earth surface shall be compacted to 95% density. Section 01015 indicates locations to receive gravel.

2.4 WATER SYSTEM

Construct a potable water system, to include development of a ground well water source, water well pump(s), service booster pumps, hydro-pneumatic water storage tank, water storage tank, and underground pipe distribution system. Assume that the well shall be constructed to deliver a flow rate that is twice the required daily demand. The storage tanks shall provide capacity for a minimum of 100 percent of the required daily demand based on 190 L/capita/day (50 gal/capita/day). The storage tank and distribution system shall be designed to provide a minimum 276 kPa (40 psi) at ground level at all points in the systems. Minimum pressures of 207 kPa (30 psi), under peak domestic flow conditions, can be tolerated in small areas as long as all peak flow requirements can be satisfied. Maximum water

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pressures in distribution mains and service lines shall not exceed 517 kPa (75 psi) at ground elevation. Tank capacity shall be at least 1,500 gallons (1 day at a use of 50 gal per person per day).

Construction shall include development of a ground well water source; provide water well pump(s) and service booster pumps, chlorination and hydro-pneumatic water storage tank(s). Domestic cold and hot water shall be provided in the barracks/DFAC and office buildings to serve the water usage and plumbing fixtures provided for that facility. Water service shall enter the building in a mechanical, toilet, storage, or similar type space. All water piping shall be routed parallel to the building lines and concealed in all finished areas. Insulation and heat trace shall be provided where required to control sweating of pipes or to provide protection from freezing.

The Contractor shall install water distribution mains, branches, laterals, lines and service connections to include all pipe, valves, fittings and appurtenances. Exterior water line construction shall include service to all buildings. The required Average Daily Demand (ADD) is 50 gallons per capita per day (gpcd). Provide one outside water tap per building for landscaping purposes. All new water wells shall be located inside the compound. The site population is 30 personnel.

2.5 SANITARY SEWER SYSTEM

Sanitary sewer collection and treatment system shall be constructed by contractor. Sewer collection system shall consist of gravity sewer pipe and appurtenances such as manholes, cleanouts and building service connections. The gravity sewer collection system shall connect to the sewage treatment and effluent disposal system. The Contractor shall construct the systems in accordance with criteria established in UFC 3-240-07FA, *Sanitary and Industrial Wastewater Collection-Gravity Sewers and Appurtenances* and UFC 3-240-02N *Wastewater Treatment Systems Augmenting Handbook*. The sewage collection and treatment system and effluent disposal shall be constructed to accommodate a facility population as specified in the Scope of Work. System capacity shall be calculated based on a hydraulic waste load that is equivalent to 80 percent of the Required Daily Demand for the water system as specified in these technical requirements, or as 40 gallons per capita per day (gpcd), whichever is greater. A geotechnical investigation of the proposed sewage treatment site is required and the contractor shall construct the sewage treatment system to be compatible with site and soil conditions. Sewage treatment system shall be a traditional septic tank absorption field effluent disposal system. Construction requirements and criteria for septic tank & subsurface absorption field and mound systems shall be in accordance with guidelines outlined in TM 5-814-3/AFM 88-11, *Volume III Domestic Wastewater Treatment* and UFC 3-240-02N *Wastewater Treatment Systems Augmenting Handbook*. Minimum acceptable percolation rates are categorized as slow permeable 60 to 120min/in (24-48min/cm). The sewage treatment system shall be sited the maximum distance possible from the living quarters, working areas, public use areas and proposed facilities. The septic tank shall not be located under a building, road, or parking lot. Bollards shall be erected 1.2 meters on center around the septic tank to protect it from vehicle traffic. The sewage treatment system shall be accessible by road for maintenance. Construction of the sewage collection and treatment system must account for all current flows as well as anticipated flows. Storm water flow shall not be considered in the waste water treatment system. If a septic tank absorption field effluent system is found to be unsuitable the Contractor shall notify the COR for guidance.

2.6 SITE POWER, ELECTRICAL, DISTRIBUTION SYSTEM, AND FUEL STORAGE

2.6.1 Contractor shall construct electrical systems as per the design for the facilities included in this Contract. In addition, the Contractor shall also site adapt and construct the electrical systems for the Guard Towers. Contractor shall refer to Section 01015 Paragraph 9 for the detail description and requirements of the Systems. Major Electrical Systems are, but not limited to: (a) On-Site Power Plant, (b) Site Secondary Power Distribution System, (c) Interior Secondary Power Distribution System, (d) conduit for future telephone system, (e) Closed Circuit Television System and (f) Lightning Protection System.

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Bulk fuel storage tanks are required for a 30 day supply of fuel. These tanks shall be filled with fuel upon completion of the contract.

2.6.2 On-Site Power Plant: Power Plant shall consist of two (2) 115 KW (144KVA) generators to provide service to the Company Compound. Generators shall be provided with a synchronizer-switch, so that when total power demanded from one generator reaches 90% of the generators maximum, the second generator shall automatically start and supplement the first, sharing the load between the two generators equally. Generators shall be provided inside "weather-proof" enclosures. Generator pads shall be constructed with a reinforced concrete floor slab. A covered shelter shall be provided. The shelter shall be pole mounted and shall provide coverage for the generator and switchboard pads.

2.6.3 Site Secondary Power Distribution System: Site Secondary Power Distribution System shall include installation of underground cables in direct buried PVC Schedule 40 conduit from the Power Plant to the individual facilities.

2.6.4 Interior Secondary Power Distribution System: Interior Secondary Power Distribution System, rated at 380/220 volts, 3 phase, 4 wire and 50 Hz. with wiring installed in surface mounted conduits, shall be provided in all facilities, including guard towers and guard house / shacks.

2.6.5 Conduit for Future Interior Telephone System: Provide mounted conduits with pull wires and a cross connection box only.

2.6.6 Closed Circuit Television (CCTV) System: CCTV shall be provided in the Company Office building to monitor the jail cells.

2.6.7 Lightning Protection System. Lightning Protection System shall be provided on all buildings and guard towers to protect against lightning strikes.

2.7 FORCE PROTECTION MEASURES

2.7.1 The Contractor shall construct force protection measures as detailed in the drawings, which include perimeter walls, gates, vehicle barriers, guard shacks, guard houses, and guard towers. Construct perimeter walls as indicated on the site plan from masonry or native stone when available, as shown on the drawings. Install outriggers and single-strand concertina wire on top of the wall. The walls shall measure at least 2.4m high with a thickness of the walls not less than 0.60m. Guard towers shall be constructed at all four site corners at an offset. Fragmentation film shall be placed over the guard tower windows. Guard tower structures shall include exterior perimeter catwalk to allow for all-around visibility. Outrigger supporting arms shall be "Y" shaped with post securely embedded into the top of the wall.

2.7.2 The Primary Entry Control Point (ECP) will include a manually operated swing steel gate for vehicles and a separate gate for personnel. The Primary ECP will also include active vehicle barriers, a guard house, guard shack, drop metal swing arm gates, rejection lane/exiting lane, and passive (strategically placed – serpentine pattern) vehicle barriers to prevent high speed vehicle entry into compound. Design vehicle for ECP entrance is a fuel delivery/septic tank truck typical for region of project site. Refer to drawings for concept and layout. Turn radius shall be large enough for large trucks to maneuver.

2.7.3 The Secondary Entry Control Point (ECP) will include a manually operated, swing gate, personnel gate, guard shack, drop metal swing arm gates, rejection/exiting lane, and passive (strategically placed – serpentine pattern) vehicle barriers to prevent high speed vehicle entry into compound. Refer to drawings for concept and layout. Turn radius shall be large enough for large trucks to maneuver.

2.7.4 Swing gates shall be a pair of 3.65m wide x 2.4m high leafs, constructed of a steel tube frame and steel tube intermediate posts and rails. The design of the gates shall insure that it is dimensionally stable,

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square, true and planar. Gate leafs shall not rack or deflect when installed on its hinges. Gates shall have a sufficient number of hinges to support each gate leaf. Provide a locking mechanism that holds the gates together when in the closed position as well as a drop bolt that engages a steel sleeve embedded in the pavement.

2.7.5 At a distance of 31m from the primary ECP, known as the stand-off ECP, design and construct a drop metal swing arm. The outside lanes will be lined with either rock or filled concrete containers 1m high.

2.7.6 Guard Shack - Construct a guard shack, located outside the compound at the stand-off primary and secondary ECP locations, where the drop metal swing arm will be built. The guard shack shall be an 9 SM building consisting of a reinforced concrete foundation and floor slab, reinforced infill CMU walls, a concrete roof slab, and a sloping metal roof. The floor finish shall be sealed concrete. The building shall have 3 horizontal sliding windows, one located in each wall. Provide 1 exterior heavy duty steel door.

2.7.7 Guard House - Construct a guard house, located inside the compound walls, next to the primary ECP, where the gate will be located, as indicated on the site plan. The guard house shall be a 21.1 SM building consisting of a reinforced concrete foundation and floor slab, reinforced in-fill CMU walls, and a concrete roof slab, and sloping metal roof. The building shall have 3 horizontal sliding windows, one located in each wall. The non-windowed wall shall be facing the perimeter wall. The exterior wall finish shall be stucco and the interior finish shall be plaster. The finished ceiling shall be plaster. Provide mineral fiber insulation in the ceiling space. Provide 1 exterior heavy duty steel door. The guard house shall be heated with electric resistive heaters.

2.7.8 Guard Towers – The contractor shall construct four (4) guard towers in accordance with the contract documentation. The following criterion applies to the guard tower construction:

- Steel surfaces shall be provided with a galvanized coating. Exposed surfaces shall be provided with a shop-primed finish in addition to the galvanized coating. Commercial grade hinges are required on personnel door and awning windows – three hinges per window / door. Door pull to be standard door pull product or can be fabricated out of metal. Product should be sturdy and functional. Install door stop in door frames on all sides. Install slide bolts on all doors or some equivalent locking device. Pre drill holes in glazing for attachment with screws. Windows shall be configured to slide in a metal track in order to open

- The roof shall have a gutter and downspout system to evacuate rain accumulation. The down spout shall run the entire height of the tower and drain at the finished ground level to a splash block. The stairs and platforms shall be constructed per OSHA Standards, with entry to the tower through a lockable security door.

- Guard towers shall be provided with general lighting and shall be fitted with one 360-degree omni-directional searchlight. Do not use white lights inside guard towers. Use red, blue, or black lenses in interior guard tower lighting. One weather-resistant duplex receptacle shall be provided as required for general use. The area in the immediate exterior vicinity of the guard tower shall be provided with an all weather non-slip surface and shall be graded to sufficiently drain away from structure. Provide conduit to the tower for installation of a future internal communication system. Guard towers shall be heated with electric resistive heaters.

- All four guard towers will be placed at an offset in the corners of the perimeter compound; Contractor will insure that all seismic requirements are met in the design and construction of the facility.

2.8 ROAD NETWORK

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The Contract shall construct a parking area, roads, and walkways in accordance with the contract documentation.

2.9 TRASH POINT

The Contractor shall place, in a location convenient for easy removal, a trash collection point. It shall be located outside the compound walls. The trash point shall be a 1.8 m X 1.8 m concrete pad with a 1.8 meter tall wooden fence about the perimeter. One side shall have a 1.2 m wide gate entrance.

2.10 COMPANY OFFICE BUILDING

a. The contractor shall site adapt and construct a Company Office building in accordance with the scope of work, technical specifications, and drawings. This facility building shall be a 288 m² building consisting of a reinforced concrete foundation and floor slab, reinforced in-fill CMU walls, a concrete roof slab, and a sloping metal roof.

b. The Company Office building shall include space for the following functions: Operations Communications Center; Conference Room; Open Office; Holding Cell; Evidence Room; Armory; Vault; Commander's Office; Commander Sleeping/Bathroom Suite; Female Sleeping/Bathroom Suite; Janitor Closet; Toilet; and Electrical Room. The Operations Communications Center and the Commander Sleeping Bathroom suite shall be conditioned by a split system heat pump. Toilets shall be heated by electric resistive heating units and all other areas shall be heated by wood stove and wood stove heaters. Power and lighting shall be provided in all rooms. Water and sewer service shall be provided in the bathrooms and the Janitor Closet.

c. Foundation work and floor: Construct the foundation in accordance with the contract documentation. Contractor will insure that all seismic requirements are met in the construction of this facility. Foundation excavation shall extend a sufficient distance from walls and footings to allow for placing and removal of forms. The Contractor shall direct surface water away from the excavation to prevent erosion and undermining the foundation by constructing diversion ditches, dikes, or other site grading.

d. Exterior and interior wall construction and roof: Construct the exterior and interior walls, and roof in accordance with the contract documentation. The Contractor will insure that all seismic requirements are met in the design and construction of this facility.

e. The Operations Communications Center shall serve as the communications hub for the compound. All communications conduit and duct banks shall terminate in this room. Provide communications conduit with pull string and duct bank.

f. The Conference Room shall provide space for eight persons seated about a conference table.

g. The open office shall provide space for five desks or workstations for the Middle Rank Police.

h. The holding cells will not have windows and each holding cell shall have reinforced concrete block walls or concrete and polystyrene panel walls. Each holding cell will have an 11-13 gauge steel door with a dead-bolt lock. The door shall have a pass-through slot for passing of food trays with a hinged cover lockable from the outside. Built into the bottom of the door shall be a 0.3m wide by 0.5m tall door for passing a bucket in and out with a hinged cover lockable from the outside. Install a 2.4m long bench securely bolted to the floor. Each holding cell will also have an Afghan toilet (eastern style) oriented in the correct cultural direction with a screen about 1.3m high in front of the toilet.

i. Evidence Room. Provide a 12 m² Evidence Storage room. The walls shall be reinforced concrete block walls or concrete and polystyrene panel walls with no windows, high security steel door, and

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explosion-proof lighting. The function of the room shall be to store evidence collected from crime scenes, as well as confiscated weapons, drugs, money, and other valuables. The room shall have shelving on three sides to store items of varying sizes. The Evidence Storage Room shall be located adjacent to Armory. Entrance to the Evidence Storage Room shall be in the Armory. Provide a high security metal door, metal frame and hardware.

j. Armory. Provide a 14 m2 Armory for weapons storage. The walls shall be reinforced concrete block walls ~~or concrete and polystyrene panels~~. The room shall be windowless and have high-security metal door, metal frame and hardware. Provide wooden racks for storing long-arm weapons vertically. Racks shall not be furnished with locking bars. The Armory shall be located adjacent to the Evidence Storage and the Vault.

k. Vault. Provide a 4 m2 vault adjacent to the Armory. The vault shall be constructed of reinforced concrete block walls ~~or concrete and polystyrene wall panels~~ and a vault door. Access to the vault shall be through the Armory. The function of the vault shall be to store weapons, money, and narcotics.

l. The Commander's Sleeping/Bathroom Suite shall provide bedroom and toilet areas for one High Rank Police. Entrance to the suite shall be through the corridor and the Commander's Office. The toilet shall be designed not to face east or west.

m. The Commander's Office shall provide office space for one High Rank Police Officer. The office shall be located adjacent to the Commander's Sleeping/Bathroom Suite.

n. The Females Sleeping/Bathroom Suite shall provide bedroom and toilet areas for four female police in bunk bed style sleeping. The toilet shall be designed not to face east or west.

o. Wall and ceiling finishes - Complete the wall and ceiling finishing/painting in accordance with the contract documentation.

CMU surfaces are to receive a 1cm plaster coat. The contractor shall paint the interior walls and trim, and the interior ceiling of the building. The surfaces include the interior wall space, the trim, windows, doors, and other interior items. The Engineer shall select colors. All the walls will be painted with water-based paint and building exteriors shall be painted with acrylic based paint. Water-based trim paint will be used for all wood surfaces such as doors, window frames, etc. Contractor will paint according to the following schedule:

PAINT SCHEDULE:

All Surfaces	Water Based Primer	1 Coat
Interior Walls	Water Based Paint	2 Coats
Interior Ceilings	Water Based Paint	2 Coats

All CMU, brick or other porous masonry surfaces shall receive a filler coat prior to finish coats. All surfaces shall be free of dust, dry, and clean prior to painting. Rooms shall be swept and cleaned before painting begins. The time between coats shall conform to the time recommended by the manufacturer. In latrine and shower rooms (if required), use waterproof paint. Contractor will clean up all paint drips, splatters, and spills on surfaces such that no paint stain remains.

p. Window and door installation - Caulk all joints between masonry and window and doorframes to prevent the passage of wind and water. Material should be silicon applied with a caulking gun to a dry, clean surface.

q. Electrical – Provide and install new electrical devices including light fixtures, light bulbs, light switches, receptacles, distribution panels, conductors, junction boxes, conduit and other items as shown schematically on the electrical drawings. The contractor is responsible to wire all facilities. The

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contractor shall construct and install according to the lighting plan, the ac distribution board, the lighting distribution board and the power distribution board.

r. Fuel source for heating: ~~The contractor shall use propane for heating.~~ The Contractor shall provide wood stoves as a secondary heating source in all inhabited areas with electric resistive heaters or split-packs as the primary heat source. The Contractor shall provide a 14 day supply of ~~propane~~ wood sufficient for heating at the completion of the contract. Proper ventilation shall be required to assure that fumes/smoke does not build up within the facility.

s. Concrete stoops shall be provided at all exterior doors.

t. Plumbing shall be provided in accordance with the drawings and Section 01015.

2.11 BARRACKS/DINING FACILITY (DFAC) BUILDING

a. The contractor shall site adapt and construct the Barracks/DFAC building in accordance with the scope of work, technical specifications, and drawings. This facility be a 372 m² building (with a separated 6 m² wood stove kitchen) consisting of a reinforced concrete foundation and floor slab, reinforced concrete frame and in-fill CMU walls, a concrete roof slab, and a sloping metal roof. Provide fenced in storage yard (with gate at the end of the sidewalk) at kitchen area as indicated on the contract drawings.

b. The barracks area shall include the following: five private sleeping rooms for middle ranked police; open bay sleeping area for twenty Ordinary Rank Police in bunk bed sleeping; private toilet for middle ranked police; shared toilet and shower rooms for ordinary ranks; 10.5 m² barracks storage; and electrical room.

c. The DFAC area shall include a dining hall with capacity for seating 24 personnel and a kitchen (29.25 m²) kitchen; kitchen storage (19 m²); and shall be provided with (2) commercial grade propane gas stoves for cooking. Provide (2) 50 Kilogram propane tanks for gas stoves. Provide connections from the outside to the gas stoves in the kitchen. Provide fenced in storage yard at kitchen area. Provide a separate wood burning cooking stove kitchen annex 6 m² building within the DFAC yard with (2) commercial grade wood fired cooking stove. This annex to the kitchen shall be connected to the main building with a covered walkway. A covered area, outside of the building, shall be provided for storage of propane tanks. The Contractor shall provide stoves, countertops, electrical capacity and floor space for future refrigerators/freezers (not in contract) within the DFAC. Floor drains shall be incorporated into the dining area with the floor sloped to drain. Trench type floor drains shall be installed in the kitchen cooking and dishwashing areas. Hand wash stations in the entry vestibule shall be provided. Trough type sinks shall be used. Install a large wash basin with a low rim height designed for washing very large pots. Fire protection is to be provided by fire extinguishers at easily accessible locations.

d. Provide water and sewer service to bathrooms and kitchen (no water service for the kitchen annex as this room will not be provided with heating).

e. Provide power and lighting to all rooms. Provide propane heaters in sleeping rooms and dining hall. Provide electric resistance heating for bathrooms and kitchen. Provide ceiling fans in sleeping rooms and dining hall. Provide 100 mm diameter conduit with pull string and hand holes from Company Office Building to Electrical Room.

f. Foundation work and floor: Construct the foundation in accordance with the contract documentation. Contractor will insure that all seismic requirements are met in the construction of this facility. Foundation excavation shall extend a sufficient distance from walls and footings to allow for placing and removal of forms. The Contractor shall direct surface water away from the excavation to prevent erosion and undermining the foundation by constructing diversion ditches, dikes, or other site grading.

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g. Exterior and interior wall construction, and roof: Construct the exterior and interior walls, and roof in accordance with the contract documentation. Walls shall be constructed of reinforced concrete block ~~or concrete/polystyrene panels~~. The Contractor will insure that all seismic requirements are met in the design and construction of this facility.

h. Berthing rooms: The Contractor shall construct multiple berthing rooms for males based on the guidance provided in the contract documentation. Ceiling fans shall be installed for ventilation.

i. Toilet and shower facilities - Construct toilets, sinks and wash areas in accordance with the contract documents. Separate male and female restrooms shall be constructed. Electric cabinet heaters suitable for a wet environment shall be utilized to provide heat in the facility. Electric hot water heaters shall be installed to provide hot water to the showers and sinks. Shower stalls shall be large enough to allow room to dress and undress between an outer and inner shower curtain. Stalls shall be no less than 2 m x 1.5 m and shall have a solid door on the outside. Showers shall contain a mixing valve for hot and cold water mixing. There shall be a fixed shower head nozzle attached directly to the pipe. All toilets shall be eastern style with wall-mounted faucets. Urinals are not required. All sinks shall be trough type constructed of block and concrete with ceramic tile exterior and lining capable of withstanding abuse. The building shall be constructed with exhaust fans to ventilate steam to the outside environment and, where required, insulated piping to prevent freezing of water pipes in winter. All water supply plumbing shall be exposed and galvanized.

j. Window and door installation - Caulk all joints between masonry and window and doorframes to prevent the passage of wind and water. Material should be silicon applied with a caulking gun to a dry, clean surface.

k. Wall and ceiling finishes - Complete the wall and ceiling finishing/painting in accordance with the contract documentation.

CMU surfaces are to receive a 1cm plaster coat. The contractor shall paint the interior walls and trim, and the interior ceiling of the building. The surfaces include the interior wall space, the trim, windows, doors, and other interior items. The Engineer shall select colors. All the walls will be painted with water-based paint and building exteriors shall be painted with acrylic based paint. Water-based trim paint will be used for all wood surfaces such as doors, window frames, etc. Contractor will paint according to the following schedule:

PAINT SCHEDULE:

All Surfaces	Water Based Primer	1 Coat
Interior Walls	Water Based Paint	2 Coats
Interior Ceilings	Water Based Paint	2 Coats

All CMU, brick or other porous masonry surfaces shall receive a filler coat prior to finish coats. All surfaces shall be free of dust, dry, and clean prior to painting. Rooms shall be swept and cleaned before painting begins. The time between coats shall conform to the time recommended by the manufacturer. In latrine and shower rooms (if required), use waterproof paint. Contractor will clean up all paint drips, splatters, and spills on surfaces such that no paint stain remains.

l. Electrical – Provide and install new electrical devices including light fixtures, light bulbs, light switches, receptacles, distribution panels, conductors, junction boxes, conduit and other items as shown schematically on the electrical drawings. The contractor is responsible to wire all facilities. The contractor shall construct and install according to the lighting plan, the ac distribution board, the lighting distribution board and the power distribution board.

m. Fuel source for heating/cooking: The contractor shall use wood stoves for heating, with the exception of the bathrooms, kitchen, and dining area, which are to use electric resistive heating. The Contractor

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shall provide a 14 day supply of ~~propane~~ wood sufficient for heating at the completion of the contract. Proper ventilation shall be required to assure that fumes/smoke does not build up within the facility.

n. Fire extinguishers shall be installed in the DFAC and barracks areas of this facility.

o. Concrete stoops shall be provided at all exterior doors.

p. Plumbing shall be provided in accordance with the drawings and Section 01015.

2.12 MAINTENANCE AND WAREHOUSE BUILDING

a. The contractor shall site adapt and construct a maintenance and warehouse building in accordance with the scope of work, technical specifications, and drawings. This facility shall be a 315 m² building consisting of a reinforced concrete foundation and floor slab, reinforced concrete frame and in-fill CMU walls, a concrete roof slab, and a sloping metal roof. The facility shall include the following: Parts Room (9.6 m²); Storage Room (12.5 m²); two maintenance bays (130 m² total); Janitor Closet (5.2 m²); Maintenance Office (18 m²); Warehouse Office (18 m²); warehouse (105 m²); Foyer; and Electrical Room. Concrete hardstand driveway shall be constructed at the bay door entrances (refer to drawings). The maintenance bays shall have mechanical roll up bay doors and one maintenance bay shall have a maintenance pit. The warehouse shall have one mechanical roll up bay door. Walls shall be constructed of reinforced concrete block ~~or concrete/polystyrene panels~~. Provide water and sewer service to Janitor Closet, sinks, toilet room, and water hydrants in the maintenance bays. Provide power and lighting to all rooms. Provide electric heating throughout the facility. Provide 100 mm diameter conduit with pull string and hand holes from Company Office Building to Electrical Room. Protective bollards shall be placed at all roll-up door openings.

b. Foundation work and floor: Construct the foundation in accordance with the contract documentation. Contractor will insure that all seismic requirements are met in the construction of this facility. Foundation excavation shall extend a sufficient distance from walls and footings to allow for placing and removal of forms. The Contractor shall direct surface water away from the excavation to prevent erosion and undermining the foundation by constructing diversion ditches, dikes, or other site grading.

c. Exterior and interior wall construction, interior columns, and roof: Construct the exterior and interior walls, interior columns, and roof in accordance with the contract documentation. The Contractor will insure that all seismic requirements are met in the design and construction of this facility.

d. Window and door installation - Caulk all joints between masonry and window and doorframes to prevent the passage of wind and water. Material should be silicon applied with a caulking gun to a dry, clean surface.

e. Wall and ceiling finishes - Complete the wall and ceiling finishing/painting in accordance with the contract documentation.

CMU surfaces are to receive a 1cm plaster coat. The contractor shall paint the interior walls and trim, and the interior ceiling of the building. The surfaces include the interior wall space, the trim, windows, doors, and other interior items. The Engineer shall select colors. All the walls will be painted with water-based paint and building exteriors shall be painted with acrylic based paint. Water-based trim paint will be used for all wood surfaces such as doors, window frames, etc. Contractor will paint according to the following schedule:

PAINT SCHEDULE:

All Surfaces	Water Based Primer	1 Coat
Interior Walls	Water Based Paint	2 Coats

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Interior Ceilings Water Based Paint 2 Coats

All CMU, brick or other porous masonry surfaces shall receive a filler coat prior to finish coats. All surfaces shall be free of dust, dry, and clean prior to painting. Rooms shall be swept and cleaned before painting begins. The time between coats shall conform to the time recommended by the manufacturer. In latrine and shower rooms (if required), use waterproof paint. Contractor will clean up all paint drips, splatters, and spills on surfaces such that no paint stain remains.

f. Electrical – Provide and install new electrical devices including light fixtures, light bulbs, light switches, receptacles, distribution panels, conductors, junction boxes, conduit and other items as shown schematically on the electrical drawings. The contractor is responsible to wire all facilities. The contractor shall construct and install according to the lighting plan, the ac distribution board, the lighting distribution board and the power distribution board.

g. Fuel source for heating: The contractor shall use ~~propane~~ electric heating for heating the Maintenance and Warehouse Building. ~~The Contractor shall provide a 14 day supply of propane sufficient for heating at the completion of the contract. Proper ventilation shall be required to assure that fumes/smoke does not build up within the facility.~~

h. Fire extinguishers shall be installed where indicated in the contract documentation.

i. Concrete stoops shall be provided at all exterior doors.

j. Plumbing shall be provided in accordance with the drawings and Section 01015.

2.13 VEHICLE FUEL POINT

The Contractor shall construct a vehicle re-fueling point, as specified in Section 01015, capable of storing **19000** liters (5019 gallons) of diesel and **10000** liters (2641 gallons) of MOGAS. The re-fueling point shall include a concrete containment curb, fuel dispensers, a concrete pad, and protection bollards. The Contractor's design shall provide capability for fuel delivery from two locations – one from outside the wall surrounding the compound and one directly into the fuel tanks. The delivery point outside the compound wall shall be lockable and securable from tampering or sabotage.

2.14 SPARE PARTS

The Contractor shall provide a six (6) months supply of all spare parts for all facilities and all systems as recommended by the various manufacturer's instructions. Prior to purchase the contractor shall forward the lists of spare parts with pricing, by vendor to the Government for approval. A set budget amount of \$15,000 per location is to be included for this purpose.

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3. SUBMITTAL SCHEDULE

Note: The contractor shall provide separate submittal sets for each of the construction sites described in this contract.

Description	Required by Specification Section:	Due by:
Project Site(s) design meeting	01010, 2.1.1	Scheduled by Government within 10 days of NTP
Schedule of Project Site Completions	01010, 1.5	10 days after NTP
Programmatic Master Site Plan and Area Use Plan	01010, 2.1.1	30 20 days after NTP
Site Specific Submittals	01010, 1.5	Per schedule provided in Paragraph 1.5 of section 1010
Conference minutes	01335, 3.7.1	Within 7 days of each conference
Contractor information	01312, 1.6.1.1	Within 14 days of receipt of QCS software from the Government
Subcontractor administrative data	01312, 1.6.1.2	Within 14 days of receipt of QCS software from the Government
Initial project schedule submission	01321, 3.3.1	Within 10 days of notice to proceed
Updated project schedule	01321, 3.4.1	Within 4 days of Bi-weekly progress meeting
Form 4288 identifying items requiring formal submittal	01335, 3.2.2	Within 14 days of notice to proceed
Quality Control Plan	01451A, 3.2	Within 14 days of notice to proceed
Daily CQC report	01451A, 3.9	Daily
Quality control plan coordination meeting	01451A, 3.3	Before construction start
Accident Prevention Plan	01525, 1.8	7 days prior to date of preconstruction conference
Activity Hazard Analysis	01525, 1.9	7 days before start of each construction phase
AS-Built Documents		Upon Completion

4.0 Attachments

Attachment 1 – Khwab Gah Site Photographs
Attachment 2 – Kung Den Mohammad Site Photographs
Attachment 3 – Mekakei Site Photographs

Note: There are no site photographs for the Telakei Company Compound location

-- End of Section --

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**SECTION 01015
TECHNICAL REQUIREMENTS**

**AFGHAN NATIONAL POLICE - BORDER POLICE COMPANY COMPOUNDS
NIMROZ PROVINCE, AFGHANISTAN**

1. GENERAL

1.1 The Contractor's site adaptation of the design and construction must comply with technical requirements contained herein. All requirements set forth in Section 01010 (Scope of Work) but not included in the Technical Requirements, shall be considered as set forth in both, and vice versa. The Contractor shall provide design and construction using the best blend of cost, construction efficiency, system durability, ease of maintenance and environmental compatibility.

1.2 ASBESTOS CONTAINING MATERIALS

Asbestos containing material (ACM) shall not be used in the design and construction of this project. If no other material is available which will perform the required function or where the use of other material would be cost prohibitive, a waiver for the use of asbestos containing materials must be obtained from the Contracting Officer.

1.3 SAFETY

1.3.1 Unexploded Ordnance (UXO)

The Contractor shall perform search and clearing operations for clearance of mines and UXO's and provide the government a letter indicating that the site is clear of unexploded ordnance and is available for construction operations to proceed. The Contractor shall be responsible for clearing the entire site of all mines and unexploded ordnance (UXO). All mine and UXO clearing shall be done in accordance with the International Mine Action Standards (IMAS), or Afghanistan Mine Action Standards (AMAS) whichever is more stringent, and clearance shall be accomplished to the anticipated foundation depth. These standards can be found at <http://www.mineactionstandards.org/imas.htm>. No work will commence in any area that has not been cleared. If during the performance of the work under this contract, the Contractor encounters U.S. UXO, the Contractor is to immediately stop work in this area and notify the Contracting Officer.

NOTE: For previous de-mining information, the following points of contact from the UN Mine Action Center for Afghanistan are provided:

Reiko Kurihara, project manager, email reiko@unmaca.org
Cell phone: +93 070 284 686

Sandy Powell, chief Operations Officer, sandy@unmaca.org
Cell phone: +93 (0) 79 330 992

1.3.1.1 Unexploded Ordnance (UXO) Safety Support During Construction

It is the responsibility of the Contractor to be aware of the risk of encountering UXO and to take all actions necessary to assure a safe work area to perform the requirements of this contract. If after the entire site has been cleared of UXO/mines per the International Mine Action Standards (IMAS) and clearance is done to the anticipated foundation depth, the Contractor becomes aware of or encounters UXO or potential UXO during construction, the Contractor shall immediately stop

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work at the site of the encounter, move to a safe location, notify the COR, and mitigate any delays to scheduled or unscheduled contract work.

1.3.1.2 Explosives Safety

1.3.1.2.1 General Safety Considerations

General safety considerations applicable to personnel, both essential and non-essential, at project sites where UXO may be encountered include:

- a. Do not carry fire or spark-producing devices.
- b. Do not conduct explosive or explosive-related operations without approved procedures and proper supervision and UXO safety support.
- c. Do not become careless by reason of familiarity with UXO or the reported probability level of UXO contamination.
- d. Do not conduct explosive or potentially explosive operations during inclement weather.
- e. Avoid contact with UXO except during UXO clearance operations.
- f. Conduct UXO-related operations during daylight hours only.
- g. Employ the "buddy system" at all times.

1.3.1.2.2 Activity Hazard Analysis (AHA) Briefings

- a. Activity Hazard Analysis's shall be prepared in accordance with the Corps of Engineers Safety and Health Requirements Manual, EM 385-1-1.
- b. Hazard analyses will be prepared and briefed by personnel that are knowledgeable in UXO and explosives safety standards and requirements. These personnel should understand the specific operational requirement and hazard analysis methodologies. A hazard analysis will be performed for each activity to determine the significance of any potential explosive-related hazards. Explosive residues may be discovered or exposed during UXO operations in the form of powder or various granular and powder based pellets. These contaminants can enter the body through the skin or by ingestion if proper personal hygiene practices are not followed. Explosive fillers such as white phosphorus are dangerously reactive in air and acute exposure can result in serious injury to the skin, eyes, and mucous membranes. They are also a fire hazard.

Safety requirements (or alternatives) that will either eliminate the identified hazards, mitigate or control them to reduce the associated risks to an acceptable level will be developed. The adequacy of the operational and support procedures that will be implemented to eliminate, control, or abate identified hazards or risks will then be evaluated and a second risk assessment completed to verify that a satisfactory safety level has been achieved.

1.3.1.3 Notification of Noncompliance

The Contracting Officer will notify the Contractor of any detected noncompliance with the foregoing requirements. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the work site, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall make no part of the time lost due to such stop orders the subject of claim for extension of time or for excess costs or damages.

1.4 LIMITATION OF WORKING SPACE

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The Contractor shall, except where required for service connections or other special reasons, confine his operations strictly within the boundaries of the site. Workmen will not be permitted to trespass on adjoining property. Any operations or use of space outside the boundaries of the site shall be by arrangement with all interested parties. It must be emphasized that the Contractor must take all practical steps to prevent his workmen from entering adjoining property and in the event of trespass occurring the Contractor will be held entirely responsible.

Areas located immediately outside the construction area are known to contain mines and unexploded ordnance (UXO). Contractors assume all risks when venturing in or out of the designated work area.

1.5 TEMPORARY STRUCTURES

The Contractor shall erect suitable temporary fences, lighting, and necessary structures to safeguard the site, materials and plant against damage or theft and for the protection of the general public and shall adequately maintain the same throughout the course of the contract.

1.6 SUBCONTRACTORS

Compliance with the provisions of this section by subcontractors will be the responsibility of the contractor.

1.7 LIST OF CODES AND TECHNICAL CRITERIA

The following codes and technical criteria and those referenced therein shall be required for this project. References within each reference below shall be required and adhered to. This list is not exhaustive and is not necessarily complete.

American Water Works Association, ANSI/AWWA C651-99 standard
Army TM 5-853-1, Security Engineering, vols. 1 through 4, 12 May 1994
ASCE 7-02, Minimum Design Loads for Buildings and Other Structures, 2002
ASTM - American Society for Testing and Materials
AWS - American Welding Society
EIA ANSI/TIA/EIA-607: (1994) Commercial Building Grounding/Bonding Requirement Standard.
Factory Mutual (FM) Approval Guide-Fire Protection (2002).
IBC - International Building Code (and its referenced codes including those inset below)
IPC – International Plumbing Code
Lighting Handbook, IESNA, latest edition
Codes and Standards of the National Fire Protection Association (NFPA)
[as applicable and enacted in 2003, unless otherwise noted].
NFPA 10, Portable Fire Extinguishers, 2002 edition
NFPA 70, National Electrical Code, 2005 edition
International Mine Action Standards, latest edition; see
<http://www.mineactionstandards.org> for copy of standards.
UFC 1-200-01, Design: General Building Requirements, 31 July 2002
UFC 3-240-03, Operation and Maintenance: Wastewater Treatment System Augmenting Handbook
Underwriters' Laboratories (UL) Fire Protection Equipment Directory (2002).

The publications to be taken into consideration shall be those of the most recent editions. Standards other than those mentioned above may be accepted if the standards chosen are internationally recognized and meet the minimum requirements of the specified standards. The Contractor shall be prepared to submit proof of this if requested by the Contracting Officer.

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2. SITE DEVELOPMENT

The project includes furnishing all materials, equipment and labor for constructing water, sanitary sewer and storm sewer systems, as applicable. Work also includes, but is not limited to, geotechnical and topographic surveys, site clearing and grading, demolition, installation of roads and sidewalks, perimeter wall and gates, entry control points, and other facilities as described in these specifications.

2.1 GEOTECHNICAL, FOUNDATIONS AND SURVEY

2.1.1 General

The foundations shall be constructed using reinforced concrete materials as shown on the drawings and stated in the specifications. A bearing capacity of 0.75 kg/sq. cm was assumed and used in designing the building foundations; see foundation plans and paragraph 5, STRUCTURAL. The contractor is responsible for performing a geotechnical investigation to determine if the assumed bearing capacity and foundations as shown and designed will perform satisfactory. The maximum allowable settlement between footings shall be less than 2.5 cm. If the contractor determines, after completing his geotechnical investigation, that the foundations as designed will not perform satisfactory, the contractor shall redesign the foundations accordingly. The contractor is responsible for the design and construction of the foundations.

2.1.2 Geotechnical Investigation

The contractor shall perform a site specific geotechnical investigation to verify the foundations, pavements, material, earthwork and any other geotechnically related items shown on the contract drawings and specifications will perform satisfactory. The contractor shall determine all necessary geotechnical conditions by appropriate field and laboratory testing and analyses.

2.1.3 Geotechnical Qualifications

A geotechnical engineer or geotechnical firm responsible to the contractor shall develop all geotechnical engineering design parameters. The geotechnical engineer or geotechnical firm shall be qualified by: education in geotechnical engineering; professional registration; and a minimum of ten (10) years of experience in geotechnical engineering design.

2.1.4 Design Certification

The contractor shall certify in writing that the design of the project has been developed consistent with the site-specific geotechnical conditions. The certification shall be stamped by the geotechnical engineer of the geotechnical firm and shall be submitted with the final design.

2.1.5 Survey and Mapping

2.1.5.1 General Work to be performed - Conduct topographic survey, mapping and documentation of the project site to include surface physical features, buildings, existing utilities, hydrological, geological, botanical or other physical conditions that could impact design. Topographic survey data shall include horizontal and vertical (H&V) controls. The limits of the survey shall be 10 meter outside of the anticipated construction area and 15 meter wide along utility lines to be replaced.

2.1.5.2 For Horizontal and Vertical Control, the surveyor shall use established monuments, if

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available. If monuments have been destroyed or do not exist, the mapping shall be based on WGS84 geodetic system and converted to UTM coordinates. All site plans and master plans shall be drawn in the following projection and datum for incorporation into the U.S. Army Corps of Engineers GIS system: WGS 1984 UTM Zone 42 N. The horizontal and vertical control established on site shall be a closed loop with third order accuracy and procedures.

2.1.5.3 All of the existing control points used at the site shall be plotted at the appropriate coordinate point and shall be identified by name or number, and adjusted elevations.

2.2 ENVIRONMENTAL PROTECTION

2.2.1 Applicable Regulations

The Contractor shall comply with all Afghani laws, rules, regulations or standards concerning environmental pollution control and abatement with regard to discharge of liquid waste into natural streams or manmade channels. The Contractor shall review local environmental regulations with the Contracting Officer prior to design and discharge of any liquid wastes into natural streams or manmade channels.

2.2.2 Notification

The Contracting Officer will notify the Contractor in writing of any observed non-compliance with the foregoing provisions. The Contractor shall immediately take corrective action. If the Contractor fails or refuses to promptly take corrective action, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No extension of time or damages will be awarded to the Contractor unless it was later determined that the Contractor was in compliance.

2.2.3 Spillages

Measures shall be taken to prevent chemicals, fuels, oils, greases, bituminous materials, waste washings, herbicides and insecticides, and construction materials from polluting the construction site and surrounding area.

2.2.4 Disposal

Disposal of any materials, wastes, effluents, trash, garbage, oil, grease, chemicals, etc., shall be taken to a dumpsite off site and subject to the approval of the Contracting Officer. Burning at the project site for the disposal of refuse and debris will not be permitted.

2.3 CIVIL SITE DEVELOPMENT

2.3.1 Site Plan

The contractor shall provide layout drawings of each site based on the topographic survey. The contractor shall locate the facilities in general agreement with the drawings included and any requirements in these technical specifications. All buildings, roads, parking areas, entry control points, guard towers, fence, utility structures, and other site features shall be clearly defined and dimensioned on the site plan. Buildings shall be located to provide access for emergency vehicles and fire fighting. Roads and parking areas shall be designed for turning radius of the largest vehicle entering the compound.

2.3.2 Demolition

Demolition shall include removal of all structures, foundations, pavements, and utilities, and

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clearing and grubbing. All refuse and debris shall be disposed of off site. Holes and depressions shall be backfilled. Fill materials shall be composed of satisfactory soils or aggregates defined in ASTM D 2487 as GW, GP, GM, SP, SM, SW, CL-ML. Minimum soil compaction shall be 95 percent of maximum density as defined in ASTM D 1557.

2.3.3 Grading and Drainage

The contractor will provide all necessary site grading to insure adequate drainage so that no building or pavement will be flooded due to a rainfall of a 10-year frequency. Drainage of the area should be compatible with the existing terrain. Culverts and drainage structures, if required shall be in accordance with paragraph 2.3.6.3, Storm Drainage System. Building floor elevations shall be a minimum 150 mm above finish grade. Finished grades shall slope away from the building on all sides at a minimum of 2%.

2.3.4 Paving

2.3.4.1 Roads

Roads and paving will be provided in accordance with the site plans, connection of ECP's to existing roadways will also be provided. Contractor shall construct roads and parking areas using aggregate surface. Aggregate surfacing shall be designed for the expected traffic volume and composition and in accordance with the recommendations of the geotechnical survey. Aggregate surfacing materials must be well graded, durable aggregate uniformly moistened and mechanically stabilized by compaction. Degree of compaction shall be expressed as a percentage of the maximum density obtained by the test procedure presented in ASTM D 1557 or equivalent DIN, BS, or EN standards.

2.3.4.2 Sidewalks

Sidewalks shall be provided to connect parking areas with buildings and adjoining buildings where foot traffic is anticipated. Sidewalks shall be constructed with aggregate surfacing. Aggregate surfacing shall be 100mm (4 inches) in thickness. Aggregate surfacing material must be well graded, durable aggregate uniformly moistened and mechanically stabilized by compaction.

2.3.4.3 Vehicle Fuel Point

Vehicle fuel point pavement shall be a Portland cement concrete reinforced slab in accordance with drawings. Minimum pavement section shown shall be adjusted if geotechnical survey indicates thicker section is required. Concrete and reinforcing shall be in accordance with Section 5, Structural of this specification.

2.3.5 Entry Control Point

2.3.5.1 Exterior Compound Wall

Construct perimeter walls where indicated on the site plan from masonry or native stone when available, as shown on drawing details. Install outriggers and single-strand concertina wire on top of the wall. The walls shall measure at least 2.4 m high with a thickness of the walls not less than 0.60 m.

2.3.5.2 Gates and Fence

Fence and gate fabric shall be No. 9 gage wires woven into a 50 mm diamond mesh. Fabric shall be coated with 366 grams per square meter zinc galvanizing. Posts shall be ASTM F 1083 Pipe,

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Steel, Hot Dipped Zinc Coated (Galvanized) Welded or equal. Post sizes shall be as shown on drawings.

The gates shall be swing type. Vehicle gates shall be a pair of 3.65 m wide x 2.4 m high leafs, constructed of a steel tube frame and steel tube intermediate posts and rails. The design of the gates shall insure that it is dimensionally stable, square, true and planar. Gate leafs shall not rack or deflect when installed on its hinges. Gates shall have a sufficient number of hinges to support each gate leaf. Provide a locking mechanism that holds the gates together when in the closed position as well as a drop bolt that engages a steel sleeve embedded in the pavement.

2.3.5.3 Reinforced Barbed Tape

Reinforced barbed tape shall be 600 mm diameter concertina style coil consisting of 31 loops. Each loop shall consist of 19 barb clusters per loop. Adjacent coils loops shall be alternately clipped together at three points about the circumference to produce the concertina effect upon deployment. Spacing between attachments points when deployed shall be 400 mm. The reinforced barbed tape shall be fabricated from 430 series stainless steel with hardness range of Rockwell (30N) 37-45 conforming to the requirements of ASTM A 176. Each barb shall be a minimum of 30.5 mm (1.2 inch) in length, in groups of 4, spaced on 102 mm (4 inch) centers. The stainless steel core wire shall have a 2.5 mm (0.098 inch) diameter with a minimum tensile strength of 895 MPa. Sixteen gauge stainless steel twistable wire ties shall be used for attaching the barbed tape to the barbed wire. The reinforced barbed tape shall be equivalent to NSN: 5660-01-457-9852.

2.3.5.4 Outriggers

Outrigger supporting arms shall be "Y" shaped with post securely embedded into the top of the wall. Posts shall conform to ASTM F 1083, Pipe, Steel, Hot Dipped Zinc Coated (Galvanized) Welded.

2.3.5.5 Vehicle Barriers

2.3.5.5.1 Active Barriers - Drop Arm Gates

The height of the beam shall be a minimum of 30 inches above finished grade. The crash beam must be capable of blocking a minimum road width of 4.0 meters. The crash beam shall be manually raised and lowered with less than 60 pounds of force. The end of the crash beam should include a locking pin with padlock acceptance for securing the beam when it is in the down position.

Additional active barriers shall be tire shredder type with manual latch down capability. Shredders shall extend the entire width of the roadway opening where installed.

2.3.5.5.2 Passive Barriers

Barriers shall be concrete blocks of one meter by one meter by one meter dimensions. Similar arrangements of large stones (one cubic meter size), jersey barriers or equal sized obstacles may be used.

2.3.6 Civil Utilities

2.3.6.1 General

The design of the water and sanitary systems shall be sized to provide flow and discharge based on a fixture unit basis. The design drawings shall show all utility lines, line sizes, valves, manholes, disinfection systems, and applicable details associated with water and sanitary system

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designs. Contractor shall install and connect exterior sanitary sewer collection and water supply piping to service connection points of each facility.

2.3.6.2 Water Supply The contractor shall construct water well(s) inside the compound, to provide sufficient supply for the facility. If unavailable within the compound, Contractor shall notify the COR for resolution. Off site water wells then may become a possibility. Unless noted elsewhere, wells shall be capable of supplying one day demand with 16 hours of pumping time. Well construction shall be in accordance with AWWA A100 Water Wells.

Well installation - Well shall be drilled or augured to a minimum depth of 20 meters below the existing water table. Refer to contract documentation (drawings and technical provisions) for installation of well and pump.

Casing - In unconsolidated material, casing shall be extended to the top of the well screen. In rock formations (drilled wells) the hole may be left open with casing extended 3 meters into the rock formation. All wells will be cased 0.5 m above grade (i.e., base of pit, ground surface, etc.) and be fitted with a lockable cap with air gap (vacuum relief during pumping). Each section of casing will be joined with standard couplings and full-threaded joints, or by proper welding, so that all joints are sound and watertight. Well casing alignment shall not interfere with the proper installation and operation of the pump. The bottom of the casing will be fitted with a metal or PVC well screen that will permit maximum transmission of water without clogging. The minimum length of screen shall be at least 3 meters. A base plate with reverse ball valve (check valve) will be placed at the base of the screen. A watertight Pump suction pipe will be placed inside the casing, with a submerged piston pump cylinder at the base of the pipe. The piston pump cylinder will be no more than 1.5 m from the base of excavation. The pump suction pipe will have a weep hole in pipe 2.0 meters below grade. Casing size shall be 100mm to 200mm in inside diameter. Casing material shall be Schedule 40 steel, Schedule 40 PVC, or equivalent material.

Sealing - The drilling process will create a hole (borehole) larger than the casing. The entire space between the casing and the edge of the borehole will be filled with gravel, overburden, or concrete as follows:

- a. The upper 3 meters of the well bore will be sealed with cement grout. Grout shall be placed in one continuous mass and be impermeable.
- b. The space around the well screen will be filled with crushed stone or gravel (gravel pack). Average gravel particle size will be approximately 1 centimeter in diameter.
- c. The space between the top of the gravel pack and the base of the grout seal may be backfilled with overburden or other clean earth material.

Disinfection - Disinfection of the source will be provided in accordance with locally accepted methods and standards. At a minimum the source will be developed until all suspended material associated with drilling have been removed.

Source protection - Surface drainage within 30 m of wellhead will ensure no ponding, flooding or collection of runoff adjacent to the well. This can be accomplished through surface grading or use of gravel drains to modify site drainage in the vicinity of the well. Contractor will identify all sources of contamination and ensure the proposed well site meets minimum standoff distances as indicated below:

Sewage storage areas (outhouses, tanks, individual sewage pits) – 30 m
Septic fields (infiltration galleries) - 30 m
Animal pens and yards – 60 m
Fuel storage, engine maintenance/repair – 30 m

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Pumps - A standard hand pump will be attached to well with approved seal and air gap with concrete pad around it.

Crushed stone for well sealing - Shall consist of crushed stone containing angular shapes and surfaces with no rounded surfaces with the following gradation:

Sieve Size	% Total Wt. Passing
12.5 mm	100
4.75 mm	75 +/- 13
1.18 mm	25 +/- 15
75 um	8 +/- 4

All aggregate shall contain less than 5% of shale, clay lumps, coal, lignite, soft or unfragmented stone, or other deleterious materials.

Cement Grout for well sealing - Mixture shall consist of one part Portland cement to 4 parts washed sand. Water shall be mixed to produce a flowable consistency in order to fill all cracks and voids around the well casing.

Concrete - Mixture shall consist of seven sacks per cubic meter. Each sack is 49 kg of Portland cement. The mix ratio shall be 1:2:4 (Portland cement: sand: crushed angular aggregate (12.5 mm max)).

Quality control and testing

a. Pump Testing: In order to ensure that the source is capable of providing the required demand capacity, the completed well shall be tested for yield and drawdown by pumping at a minimum sustained rate of 20 liters/minute for four hours duration. The well must maintain a minimum head under sustained pumping conditions of $\frac{1}{4}$ the depth of the well. (for example, for a 40m deep well, head should be maintained at 10m from the bottom of the well).

b. Water quality testing: Water will be provided from the source that is acceptable for the intended use. Sources that do not meet the requirements of the intended use will be deemed unacceptable and another source must be established at no additional cost. Water quality testing (i.e., bacteria, chemical, turbidity, etc.) will be conducted in accordance with locally accepted methods and standards.

c. Well house: At new wells, construct a permanent well house. The floor of the well house shall slope away from the casing approximately 1 cm per 100 cm (1/8" per foot). Floor of well house shall be above floodplain. The well house design should be such that the well pump, motor and drop pipe could be removed readily. The well house shall protect valves and pumping equipment plus provide freeze protection for the pump discharge piping beyond the check valve. The well house shall be insulated. The well house shall have door locks and hatch lock on roof.

The well is to be drilled at a location recommended in writing by the contractor. The water source should be located at the highest elevation possible within the adjacent area. The well house shall have a 2.4 meter high chain link security fence with gate surrounding it. The fence and gate shall be topped with barbed wire and outriggers.

d. The site population is 30 personnel.

2.3.6.4 Water Storage

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Tank capacity shall be at least 1,500 gallons (1 day at a use of 50 gal per person per day). The tank shall be adjacent to the well house as indicated on the drawings. Fresh water tank shall be 5678 liters (1500 gallon) or more. Fresh water tank shall be UV stabilized such as not to breakdown under harsh outdoor weather conditions and will not chip, peel or corrode. Black opaque color helps prevent water borne algae growth. Tank shall be manufactured in ASTM D 1998-93 standards.

Contractor shall design hypochlorite system for disinfection. A hypo-chlorinator shall be used to feed a sodium hypochlorite solution of 5-15% available chlorine into the system. Hypochlorite compound may be a liquid or solid form. The hypo chlorination system shall consist of a chemical solution tank for hypochlorite, diaphragm-type pump, power supply, water pump, pressure switch and storage tank. The pump shall feed a hypochlorite solution in proportion to the water demand. The hypo-chlorinator shall have a pumping rate, liters per day (lpd) adequate to deliver 5 percent available hypochlorite solution adjustable to the quantity of water being produced from the source. Dosage rate will vary somewhat depending on actual pump production rate and available residual chlorine in the system. Contractor shall determine the required dosage rate milligrams per liter (mg/l) to maintain the required chlorine residual (usually 0.2-0.4mg/l) in the distribution system. Chlorine solution tank shall be large enough to hold a three days supply of hypochlorite solution. A fresh solution shall be prepared every two or three days because the solution may lose its strength over time and this will affect the actual chlorine feed rate. The hypochlorite shall be stored in a cool dry place. Sodium hypochlorite can lose from two to four percent of its available chlorine content per month at room temperature. Contractor shall verify required minimum residual chlorine in accordance with local requirements verified and approved by the Contracting Officer. The chlorination system shall have the capability for manually adjusting the dosage rate and be installed in such a manner that the system can be easily disconnected and bypassed in the event of health safety or routine maintenance and repair.

Contractor shall furnish a shelter as per chlorine manufacturer's installation requirements. The Contractor shall provide manufacturers catalog information and shop drawing to the Contracting Officer for approval.

2.3.6.5 Water Distribution

The Contractor shall provide a hydro pneumatic system with pumps, hydro pneumatic tank and other appurtenances as necessary to supply the pressure required to all facilities. The equipment shall be protected from the environment, especially freezing temperatures. The distribution system shall be designed to provide a minimum 276 kPa (40 psi) at ground level at all points in the systems. Minimum pressures of 207 kPa (30 psi), under peak domestic flow conditions, can be tolerated in small areas as long as all peak flow requirements can be satisfied. Maximum water pressures in distribution mains and service lines shall not exceed 517 kPa (75 psi) at ground elevation.

The Contractor shall install water distribution mains, branches, laterals, lines and service connections to include all pipe, valves, fittings and appurtenances. Exterior water line construction shall include service to all buildings as described in the Scope of Work. Adequate cover must be provided for frost protection. The required Average Daily Demand (ADD) is 50 gallons per capita per day (gpcd). Provide one outside water tap per building for landscaping purposes.

The Contractor shall provide pipe of adequate strength, durability and be corrosion resistant with no adverse effect on water quality. The exterior surface of the pipe must be corrosion resistant. If the pipe is installed underground pipe shall be encased with polyethylene in accordance with AWWA C105. Water distribution pipe material shall be PVC or Ductile Iron (DI). Ductile iron pipe shall conform to AWWA C104, et al. DI fittings shall be suitable for 690kPa (75psi) pressure unless otherwise specified. Fittings for mechanical joint pipe shall conform to AWWA C110.

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Fittings for use with push-on joint pipe shall conform to AWWA C110 and C111. Fittings and specials shall be cement mortar lined (standard thickness) in accordance with C104. Polyvinyl Chloride (PVC) pipe shall conform to ASTM D 1785. Plastic pipe coupling and fittings shall be manufactured of material conforming to ASTM D 1784, Class 12454B. PVC screw joint shall be in accordance with ASTM D 1785. PVC pipe couplings and fittings shall be manufactured of material conforming to ASTM D 1784, Class 12454B. Pipe less than 80mm (3 inch), screw joint, shall conform to dimensional requirements of ASTM D schedule 80. Elastomeric gasket-joint, shall conform to dimensional requirements of ASTM D 1785 Schedule 40. All pipe and joints shall be capable of 690kPa (75psi) working pressure.

2.3.6.5.1 Hydrostatic, Leakage and Disinfection Tests

The Contracting Officer will be notified not less than 48 hours in advance of any water piping test and will be given full access for monitoring testing procedures and results. Where any section of water line is provided with concrete thrust blocking for fittings or hydrants tests shall not be made until at least 5 days after installation of the concrete thrust blocking, unless otherwise approved.

2.3.6.5.2 Pressure Test

After the pipe is laid, the joints completed, and the trench partially backfilled leaving the joints exposed for examination, the newly laid piping or any valve section of piping shall, unless otherwise specified, be subjected for 1 hour to a hydrostatic pressure test of 690kPa (75psi). Each valve shall be opened and closed several times during the test. Exposed pipe, joints, fittings, hydrants and valves shall be carefully examined during the partially opened trench test. Joints showing visible leakage shall be replaced or remade as necessary. Cracked or defective pipe, joints, fittings, hydrants and valves discovered following this pressure test shall be removed and replaced and retested until the test results are satisfactory.

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2.3.6.5.3 Leakage Test

Leakage test shall be conducted after the pressure tests have been satisfactorily completed. The duration of each leakage test shall be at least 2 hours and during the test the water line shall be subjected to not less than 690kPa (75psi). Leakage is defined as the quantity of water to be supplied into the newly laid pipe, or any valve or approved section, necessary to maintain pressure to within 34.5kPa (5 psi) of the specified leakage test pressure after the pipe has been filled with water and the air expelled. Pipe installation will not be accepted if leakage exceeds the allowable leakage, which is determined by the following formula:

$L = 0.0001351ND (P \text{ raised to } 0.5 \text{ power})$ L = Allowable leakage in gallons per hour N = Number of joints in the length of pipeline tested D = Nominal diameter of the pipe in inches P = Average test pressure during the leakage test, in psi gauge

Should any test of pipe disclose leakage greater than that calculated by the above formula, the defective joints shall be located and repaired until the leakage is within the specified allowance, without additional cost to the government.

2.3.6.5.4 Disinfection Procedure

Before acceptance of potable water operation, each unit of completed waterline shall be disinfected as prescribed by AWWA C651. After pressure tests have been completed, the unit to be disinfected shall be thoroughly flushed with water until all entrained dirt and mud have been removed before introducing the chlorinating material. Flushing will be performed in a manner and sequence that will prevent recontamination of pipe that has previously been disinfected. The chlorinating material shall be liquid chlorine, calcium hypochlorite, or sodium hypochlorite. The chlorinating material shall provide a dosage of not less than 50 ppm and shall be introduced into the water lines in an approved manner. Polyvinyl Chloride (PVC) pipelines shall be chlorinated using only the above-specified chlorinating material in solution. The agent shall not be introduced into the line in a dry solid state. The treated water shall be retained in the pipe long enough to destroy all non-spore forming bacteria. Except where a shorter period is approved, the retention time shall be at least 24 hours and shall produce not less than 25 ppm of free chlorine residual throughout the line at the end of the retention period. Valves on the lines being disinfected shall be opened and closed several times during the contact period. The line shall then be flushed with clean water until the residual chlorine is reduced to less than 1.0 ppm. During the flushing period, each fire hydrant on the line shall be opened and closed several times.

2.3.6.5.5 Sampling

For each building connected to the water system, personnel from the Contractor's commercial laboratory shall take at least 3 water samples from different points, approved by the Contracting Officer, in proper sterilized containers and perform a bacterial examination in accordance with approved methods. The commercial laboratory shall be verified to be qualified by the appropriate authority for examination of potable water.

2.3.6.5.6 Acceptance Requirements

The disinfection shall be repeated until tests indicate the absence of pollution for at least two full days. The unit will not be accepted until satisfactory bacteriological results have been obtained.

2.3.6.5.7 Time for Making Tests

Except for joint material setting or where concrete thrust blocks necessitate a 5-day delay, pipeline jointed with rubber gaskets, mechanical or push-on joints, or couplings may be subjected to hydrostatic pressure, inspected and tested for leakage at any time after partial completion of

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backfill.

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2.3.6.5.8 Concurrent Tests

The Contractor may elect to conduct the hydrostatic tests using either or both of the following procedures. Regardless of the sequence of tests employed, the results of pressure tests, leakage tests, and disinfection shall be recorded for submission and approval. Replacement, repair or retesting required shall be accomplished by the Contractor at no additional cost to the Government.

- a. Pressure test and leakage test may be conducted concurrently,
- b. Hydrostatic tests and disinfection may be conducted concurrently, using water treated for disinfection to accomplish the hydrostatic tests. If water is lost when treated for disinfection and air is admitted to the unit being tested, or if any repair procedure results in contamination of the unit, disinfection shall be re-accomplished.

2.3.6.6 Sanitary Sewer

a. Sanitary sewer collection and treatment system shall be constructed by contractor. Sewer collection system shall consist of gravity sewer pipe and appurtenances such as manholes, cleanouts and building service connections. The gravity sewer collection system shall connect to the sewage treatment and effluent disposal system. The Contractor shall construct the systems in accordance with criteria established in UFC 3-240-07FA, Sanitary and Industrial Wastewater Collection-Gravity Sewers and Appurtenances and UFC 3-240-02N Wastewater Treatment Systems Augmenting Handbook. The sewage collection and treatment system and effluent disposal shall be constructed to accommodate a facility population as specified in the Scope of Work. System capacity shall be calculated based on a hydraulic waste load that is equivalent to 80 percent of the Required Daily Demand for the water system as specified in these technical requirements, or as 40 gallons per capita per day (gpcd), whichever is greater. A geotechnical investigation of the proposed sewage treatment site is required and the contractor shall construct the sewage treatment system to be compatible with site and soil conditions. Sewage treatment system shall be a traditional septic tank absorption field effluent disposal system. Construction requirements and criteria for septic tank & subsurface absorption field and mound systems shall be in accordance with guidelines outlined in TM 5-814-3/AFM 88-11, Volume III Domestic Wastewater Treatment and UFC 3-240-02N Wastewater Treatment Systems Augmenting Handbook. Minimum acceptable percolation rates are categorized as slow permeable 60 to 120min/in (24-48min/cm). The sewage treatment system shall be sited the maximum distance possible from the living quarters, working areas, public use areas and proposed facilities. The septic tank shall not be located under a building, road, or parking lot. Bollards shall be erected 1.2 meters on center around the septic tank to protect it from vehicle traffic. The sewage treatment system shall be accessible by road for maintenance. Construction of the sewage collection and treatment system must account for all current flows as well as anticipated flows. Storm water flow shall not be considered in the waste water treatment system. If a septic tank absorption field effluent system is found to be unsuitable the Contractor shall notify the COR for guidance.

b. Exterior sanitary sewer line construction includes service to all buildings requiring sewage collection. Contractor shall construct the sanitary sewer collection system using finished floor elevations. Main collection sewers will follow the most feasible route to the point of discharge. The sewer collection system shall be constructed to accommodate the facility. Construction required shall include appurtenant structures and building sewers to points of connection with Building drains 1.5m outside the building, to which the sewer collection system is to be connected.

c. The Contractor shall use the following criteria where possible to provide a layout which is practical, economical and meets hydraulic requirements:

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- Follow slopes of natural topography.
- Avoid routing sewers through areas which require extensive restoration or underground demolition.
- Avoid areas of high groundwater and placement of sewer below the groundwater table.
- Locate manholes at change in direction, size or slope of gravity sewers.
- Use straight sections between manholes, curved alignment shall not be permitted.
- Avoid placing manholes where the tops will be submerged or subject to surface water inflow.
- Evaluate alternative sewer routes where applicable.
- Verify that final routing selected is the most cost effective alternative that meets service requirements.

d. Protection of water supplies - Ensure that the sewer design meets the following criteria:

- Sanitary sewers will be located no closer than 15m horizontally to water wells or reservoirs to be used for potable water supply.
- Sanitary sewers will be no closer than 3m horizontally to potable water lines; where the bottom of the water pipe will be at least 305 mm above the top of the sanitary sewer, horizontal spacing shall be a minimum of 1.8m.
- Sanitary sewers crossing above potable water lines shall be constructed of suitable pressure pipe or fully encased in concrete for a distance of 2.7 m on each side of the crossing. Pressure pipe will be as required for force mains in accordance with local standards and shall have no joint closer than 0.9 m horizontally to the crossing, unless the joint is encased in concrete.
- Sanitary sewers shall be constructed to allow flow at 90 to 95 percent full. Sanitary sewer velocities shall be designed to provide a minimum velocity of 0.6 meters per second (mps) at the ADD flow rate and a minimum velocity of 0.8 to 1.05 mps at the peak diurnal flow rate. In no case shall the velocity drop below 0.3 mps, to prevent settlement of organic solids suspended in the wastewater. Pipe slopes shall be sufficient to provide the required minimum velocities and depths of cover on the pipe. Gravity sewer pipe shall be installed in straight and true runs in between manholes with constant slope and direction. Adequate cover must be provided for frost protection.
- The Contractor shall provide standard depth manholes (MH), that best meets the specific depth required, with an inside dimension of 1.2 meters. Manholes shall be made of cast-in-place reinforced concrete with reinforced concrete cover. The manholes, frames and covers shall be traffic rated, H-20 load rating. All manholes shall be provided with a concrete bench with a flow line trough, smoothly formed to guide waste flow to the outlet pipe from the inlet pipe(s). The top surface of the bench shall be above the crown of all pipes within the manhole. All surfaces of the bench shall be sloped smoothly toward the trough to guide flow, even under peak flow conditions.
 - 1) Manholes are required at junctions of gravity sewers and at each change in pipe direction, size or slope, except as noted hereinafter for building connections.
 - 2) Spacing. The distance between manholes must not exceed 120 m.

2.3.6.7 Storm Drainage System

2.3.6.7.1 Hydraulic Design

New storm drain pipes, if required, shall be designed for gravity flow during the 10-year design storm unless otherwise approved by the Government. The hydraulic grade line shall be calculated for the storm drain system and all energy losses accounted for.

2.3.6.7.2 Manholes

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Diameter of manholes shall be large enough to accommodate pipes entering/exiting the manhole. Manhole cast iron frames shall have a minimum opening diameter of 600mm.

2.3.6.7.3 Area Inlets

Area inlets shall be properly sized and designed to accommodate the design flows.

2.3.6.7.4 Head walls and Flared End Sections

Unless otherwise approved, head walls or flared end sections shall be provided at the ends of culverts and at storm drain outfalls. Protection from erosion and scouring at head wall and flared end section outfalls shall be provided as needed.

2.3.6.7.5 Culverts

Culvert pipes shall have a minimum diameter of 450 mm.

2.3.6.7.6 Storm Drain and Culvert Pipe

The Contractor shall select the appropriate storm drain and culvert pipe materials from local sources. Pipe, bedding, and backfill shall be of adequate strength (or stiffness) to support the earth, live, and construction loads imposed on the pipe.

2.3.6.8 Trash Point

The Contractor shall place, in a location convenient for easy removal, a trash collection point. It shall be located outside the compound walls. The trash point shall be a 1.8 m X 1.8 m concrete pad with a 1.8 meter tall wooden fence about the perimeter. One side shall have a 1.2 m wide gate entrance.

3. NOT USED

4. ARCHITECTURAL

4.1 GENERAL

All material approved shall become standardized material to be used throughout the facilities under contract. Different sub-contractors shall not use different material or standards under the contract. Intent of the project is to use locally procured materials (unless specified otherwise) and labor to the maximum extent possible while satisfying seismic building code. Conflicts between criteria and local standards shall be brought to the attention of the Contracting Officer for resolution. In such instances, the Contractor shall furnish all available information with justification to the Contracting Officer.

4.2 DESIGN CRITERIA

The Codes, Standards, and Regulations listed below shall be used in the construction of this project. The publications shall be the most recent editions. Standards other than those mentioned may be accepted provided they meet the minimum requirements and the contractor shall submit proof of equivalency to the Contracting Officer for approval.

IBC- International Building Code

4.3 EXCAVATION

Trench excavation shall be made for concrete footings. Trenches shall be a minimum of .8 meter deep. Trenches deeper than 1.5 meters shall have protective shoring to protect workers or have the sides of the trench sloped back at a slope of 1.5:1. Care shall be taken when backfilling of foundation trenches to avoid damage to walls. Any excess dirt shall become the property of the Contractor and shall be removed from the site to a location approved by the Contracting Officer.

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4.4 CONCRETE

Place 10cm (4") of capillary water barrier below areas to receive a concrete slab on properly compacted soil free of organic material. A plastic vapor barrier (10 mils thick) shall be placed over the crushed stone prior to placing of concrete slabs. Concrete flooring in wet areas shall slope to the floor drain and not allow for water to puddle. Concrete slabs in all areas shall not be placed prior to inspection and approval of piping and sub-surface by the Contracting Officer. Foundation trenches shall be level and free of loose material. Trenches shall be inspected and approved by the Contracting Officer prior to placing of any concrete foundations. See paragraph 5 for structural characteristics of concrete and reinforcing steel for foundations and slabs.

4.5 MASONRY

Storage of masonry materials shall be in a dry place or materials shall be covered with a plastic protective layer. Cover open walls each day to keep them protected and dry. Concrete masonry units (CMU) shall be 200mm wide x 400mm x 200mm high as shown on drawings. They shall be installed in running bond level and plumb. Mortar joints shall be 9mm on all sides between CMU. Joints shall be struck with a concave tool to provide a smooth recessed curved surface. Install only quality units. The surface shall be free of chips, cracks, or other imperfections that would detract from the overall appearance of the finished wall. Defective CMU or mortar shall be rejected. CMU shall conform to ASTM C 90. For other requirements, see paragraph 5 "Structural."

4.6 METAL

4.6.1 Metal Window Sills

Aluminum window sills shall be installed on the exterior of all windows. The metal window sills shall have a turn down of 5cm over the exterior masonry and stucco. Metal sills shall extend from side to side of the masonry opening in a single piece. Extend the metal windowsill a minimum of 2 cm under the bottom of the aluminum windows. Install masonry mortar as required for a smooth surface under the window sills. Sills shall slope a minimum of 6mm to the exterior and not allow water to puddle. Sealants shall be applied between joints of two (2) different materials.

4.6.2 Steel Cook Top

Provide steel cook top in kitchens minimum thickness of 1cm. Provide circular cut outs. Consult with the Contracting Officer for the diameter of circular cutouts. Provide steel infill plates for all cut out openings. Cook top can be made of several pieces for ease of handling. Adjacent plates shall be tight fitting to each other. The Contractor shall submit detailed shop drawings for review and approval prior to fabrication and installation.

4.6.3 Pass-Through Counter Top

Provide 1.6mm (16 gauge) stainless steel, or 4cm marble, pass through counter tops at openings between the kitchen and dining area. Edges shall be turned down 3 cm and corners shall be welded and ground smooth. Provide anchor angles welded to the bottom of the counters to anchor tops to masonry walls below. Provide eight (8) anchors on the Serving Counter, four (4) on each side of the wall. Anchor angles to wall with masonry expansion sleeves and stainless steel screws. Counter tops are to be 60cm wide x length of opening shown.

4.6.4 Pipe Guards for Roll-Up Doors

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Pipe guards shall be heavy duty steel pipe 200 mm diameter conforming to ASTM A 53/A 53M, Type E or S, weight STD, black finish, filled with concrete, and painted with yellow and black stripes.

4.6.5 Mirror Frames

Frames for plate glass mirrors larger than 450 by 750 mm shall be fabricated from extruded aluminum with anodized finish. Frames shall be provided with concealed fittings and tamperproof mountings.

4.6.6 Trench Covers and Frames

Trench covers shall be designed to meet the indicated load requirements. Trench frames and anchors shall be all welded steel construction designed to match cover. Covers shall have flush drop handles formed of 6 mm round stock, and shall be steel floor plate. Grating opening widths shall not exceed 25 mm.

4.6.7 SUNSHADES (POWER GENERATORS AND OTHER SECONDARY STRUCTURES)

Contractor shall design and construct sunshades for generators and other needed structures. Shop drawings shall be submitted for approval.

4.7 CARPENTRY

4.7.1 Metal Roof Wood Framing

Submit calculations and drawings for wood framing for metal sloping roof. See drawing details for roofing configuration. Typical roof slope shall be 1 in 10.

4.7.2 Lumber

Mark each piece of framing and board lumber or each bundle of small pieces of lumber with the grade mark and the species. Distinguish structural, framing, and board lumbers.

4.7.3 Preservative-Treated Lumber

The Contractor shall be responsible for the quality of treated wood products and be inspected in accordance with AWP A M2. Treated lumber shall be marked in accordance with AWP A M6. Treated lumber shall be in compliance with applicable AWP A treatment standards.

4.7.4 Preservative Treatment

Treat wood products with waterborne wood preservatives conforming to AWP A P5. Pressure treatment of wood products shall conform to the requirements of AWP A U1 and AWP A T1. Pressure-treated wood products shall not contain arsenic, chromium, or other agents classified as carcinogenic, probably carcinogenic, or possibly carcinogenic to humans. All lumber and wood work for ground contact, contact with masonry and concrete, and for underground uses, together with the following items, shall be preservative treated:

a. Wood framing, woodwork, up to the bottoms of such items are 600 mm (24 inches) or less from the earth underneath.

4.7.5 Data Required

Submit calculations and drawings for all proposed structural members.

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4.7.6 Natural Decay- and Insect-Resistant Wood

Natural decay-resistant and insect-resistant wood can be an alternative to treated wood.

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4.7.7 Structural Lumber

Except where a specific grade is indicated or specified, any of the species and grades shall have allowable unit stresses in kPa per code requirements. Use for joists, rafters, headers, trusses, beams, columns, posts, stair stringers, girders, and all other members shall be stress rated. Design of members and fastenings shall conform to AITC OT-01.

4.7.8 Framing Lumber and Board Lumber

Framing lumber such as studs, plates, caps, collar beams, cant strips, bucks, sleepers, nailing strips, and nailers, and board lumber such as subflooring and wall and roof sheathing shall be the species and grades per WWPA G-5.

4.7.9 Hardware

Unless otherwise indicated or specified, rough hardware shall be of the type and size necessary for the project requirements. Sizes, types, and spacing of fastenings of manufactured building materials shall be as recommended by the product manufacturer unless otherwise indicated or specified. Hardware exposed to the weather or embedded in or in contact with preservative treated wood, exterior masonry, or concrete walls or slabs shall be zinc-coated.

4.7.9.1 Bolts, Nuts, Studs, and Rivets

ANSI B18.2.1, ANSI B18.5.2.1M, ASME B18.5.2.2M, ASME B18.2.2, and ASTM A 687.

4.7.9.2 Anchor Bolts

ASTM A 307, size as indicated, complete with nuts and washers.

4.7.9.3 Lag Screws and Lag Bolts

ANSI B18.2.1.

4.7.9.4 Nails

Nails shall be the size and type best suited for the purpose and shall conform to ASTM F 547. Nails shall be hot-dip galvanized or aluminum when used on exterior work.

4.7.10 Trim, Finish, and Frames

Provide species and grades listed for materials to be paint finished. Provide materials that are to be stain, natural, or transparent finished one grade higher than that listed. Provide species indicated for materials to be transparent finished.

4.7.11 Steel Ladder

Shop drawings shall be submitted for the ladder to the guard towers as shown. The Contractor shall design all steel framing.

4.8 ROOFING AND WEATHERPROOFING

4.8.1 Sloped Roofs

On sloping roofs provide and install .70mm (24 gauge) galvanized steel in either corrugated or standing seam design. Metal roofing shall be anchored to wood deck sub-surface using exposed

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fasteners at 30cm on center at all seams and at 60cm on center in the panel field. Fasteners shall be placed at the top of the corrugation taking care not to dent panel. Roof sealant or adhesive shall be placed over each anchor head. Roofing system shall include all edge, ridge and penetration flashings necessary for a watertight installation. Roofing shall be galvanized mil finish. Panels shall be overlapped two corrugations side to side and be continuous sheets from ridge to eave. Provide continuous ridge vents on all gable roofs.

4.8.2 Not Used

4.8.3 Sheet Metal

4.8.3.1 Materials

Any metal listed by ASTM, DIN, BS or EN standards. Manual for a particular item may be used, unless otherwise specified or indicated. Materials shall conform to the requirements specified below and to the thicknesses and configurations established in ASTM, DIN, BS or EN standards. Standards other than those mentioned may be accepted provided they meet the minimum requirements, and the Contractor shall submit written proof of equivalency for approval. Written proof shall constitute a copy of the alternative standard and an analysis of equivalency.

4.8.3.2 Steel Sheet, Zinc-Coated (Galvanized)

Zinc coated steel conforming to ASTM A 525, DIN BS or EN Standards.

4.8.3.3 Aluminum Wall Capping

Aluminum wall capping conforming to ASTM B 209 M , DIN 18339, BS or EN Standards.

4.8.3.4 Scuppers, Gutters and Downspouts

Scuppers, gutters and downspouts shall be installed as indicated. Gutters and downspouts shall be rigidly attached to the building. Supports shall be spaced according to manufacturer's recommendations. Gutters and downspouts shall be designed and fabricated on site. Unless otherwise specified or indicated, exposed edges shall be folded back to form a 13 mm (1/2 inch) hem on the concealed side, and bottom edges of exposed vertical surfaces shall be angled to form drips.

4.8.3.5 Wall, Floor, and Ceiling Control Joints Over Plaster and Stucco

Control joints shall be provided as specified in ASTM, DIN, BS or EN Standards.

4.8.3.6 Connections and Jointing

4.8.3.6.1 Soldering

Soldering shall apply to copper, and stainless steel items. Edges of sheet metal shall be pre-tinned before soldering is begun. Soldering shall be done slowly with well heated soldering irons so as to thoroughly heat the seams and completely sweat the solder through the full width of the seam. Edges of stainless steel to be pre-tinned shall be treated with soldering acid flux. Soldering shall follow immediately after application of the flux. Upon completion of soldering, the acid flux residue shall be thoroughly cleaned from the sheet metal with a water solution of washing soda and rinsed with clean water.

4.8.3.6.2 Seaming

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Flat-lock and soldered-lap seams shall finish not less than 25 mm. wide. Unsoldered plain-lap seams shall lap not less than 75 mm. unless otherwise specified. Flat seams shall be made in the direction of the flow.

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4.8.3.7 Cleats

A continuous cleat shall be provided where indicated or specified to secure loose edges of the sheet metalwork. Butt joints of cleats shall be spaced approximately 3 mm. apart. The cleat shall be fastened to supporting wood construction with nails evenly spaced not over 300 mm. on centers. Where the fastening is to be made to concrete or masonry, screws shall be used and shall be driven in expansion shields set in concrete or masonry.

4.8.3.8 Lintel Flashing

Lintel flashing shall extend the full length of lintel. Flashing shall extend through the wall one masonry course above the lintels and shall be bent down over the vertical leg of the outer steel lintel angle not less than 50 mm, or shall be applied over top of masonry and pre-cast concrete lintels. Bed joints of lintels at joints shall be under laid with sheet metal bond breaker.

4.8.3.9 Sill Flashing

Sill flashing shall extend the full width of the sill and not less than 100 mm beyond ends of sill except at joint where the flashing shall be terminated at the end of the sill.

4.8.3.10 Wall Capping

Wall Capping shall be installed according to the manufacturer's recommendations.

4.8.4 Sealants

4.8.4.1 Interior Sealant

ASTM C 834 or ASTM C 920, Type S or M, Grade NS, Class 12.5, Use NT, DIN, BS, or EN equal standards.

4.8.4.2 Exterior Sealant

For joints in vertical and horizontal surfaces, provide ASTM C 920, Type S or M, Grade NS, DIN, BS, or EN equal standards.

4.8.4.3. Floor Joint Sealant

(ASTM C 920) Type S or M, Grade P, class 25, use T

4.8.4.4 Primers

Provide a non-staining, quick-drying type and consistency recommended by the sealant manufacturer for the particular application.

4.8.4.5 Bond Breakers

Provide the type and consistency recommended by the sealant manufacturer to prevent adhesion of the sealant to backing or to bottom of the joint.

4.8.4.6 Backstops

Backing shall be 25 to 33 percent oversize for closed cell and 40 to 50 percent oversize for open cell material, unless otherwise indicated.

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4.8.4.7 Cleaning Solvents

Provide type(s) recommended by the sealant manufacturer except for aluminum and bronze surfaces that will be in contact with sealant.

4.8.4.8 Surface Preparation

Surfaces shall be clean, dry to the touch, and free from dirt frost, moisture, grease, oil, wax, lacquer, paint, or other foreign matter that would tend to destroy or impair adhesion. Oil and grease shall be removed with solvent and surfaces shall be wiped dry with clean cloths. When resealing an existing joint, remove existing caulk or sealant prior to applying new sealant. For surface types not listed below, the sealant manufacturer shall be contacted for specific recommendations.

4.8.4.9 Masking Tape

Masking tape shall be placed on the finish surface on one or both sides of a joint cavity to protect adjacent finish surfaces from primer or sealant smears. Masking tape shall be removed within 10 minutes after joint has been filled and tooled.

4.8.4.10 Backstops

Install backstops dry and free of tears or holes. Tightly pack the back or bottom of joint cavities with backstop material to provide a joint of the depth specified.

4.8.4.11 Primer

Immediately prior to application of the sealant, clean out loose particles from joints. Where recommended by sealant manufacturer, apply primer to joints in concrete masonry units, wood, and other porous surfaces in accordance with sealant manufacturer's instructions. Do not apply primer to exposed finish surfaces.

4.8.4.12 Bond Breaker

Provide bond breakers to the back or bottom of joint cavities, as recommended by the sealant manufacturer for each type of joint and sealant used, to prevent sealant from adhering to these surfaces. Carefully apply the bond breaker to avoid contamination of adjoining surfaces or breaking bond with surfaces other than those covered by the bond breaker.

4.8.4.13 Sealants

Provide a sealant compatible with the material(s) to which it is applied. Do not use a sealant that has exceeded shelf life or has jelled and can not be discharged in a continuous flow from the gun. Apply the sealant in accordance with the manufacturer's instructions with a gun having a nozzle that fits the joint width. Force sealant into joints to fill the joints solidly without air pockets. Tool sealant after application to ensure adhesion. Sealant shall be uniformly smooth and free of wrinkles. Upon completion of sealant application, roughen partially filled or unfilled joints, apply sealant, and tool smooth as specified. Sealer shall be applied over the sealant when and as specified by the sealant manufacturer.

4.8.4.14 Protection

Protect areas adjacent to joints from sealant smears. Masking tape may be used for this purpose if removed 5 to 10 minutes after the joint is filled.

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4.8.4.15 Final Cleaning

Upon completion of sealant application, remove remaining smears and stains and leave the work in a clean and neat condition.

- a. Masonry and Other Porous Surfaces: Immediately scrape off fresh sealant that has been smeared on masonry and rub clean with a solvent as recommended by the sealant manufacturer. Allow excess sealant to cure for 24 hour then remove by wire brushing or sanding.
- b. Metal and Other Non-Porous Surfaces: Remove excess sealant with a solvent-moistened cloth.

4.9 WINDOWS, DOORS & GLAZING

4.9.1 Windows

4.9.1.1 Materials

A. Aluminum Extrusions: Provide alloy and temper recommended by the window manufacturer for the strength, corrosion resistance, and application of required finish, meeting the DIN 1725 raw material requirements, but not less than 215 N/mm² ultimate tensile strength and not less than 1.5 mm thick at any location for main frame and sash members.

B. Fasteners: Provide aluminum, nonmagnetic stainless steel, epoxy adhesive, or other materials warranted by the manufacturer to be non-corrosive and compatible with aluminum window members, trim, hardware, anchors, and other components of window units.

1. Reinforcement: Where fasteners screw-anchor into aluminum less than 0.125 inch thick, reinforce the interior with aluminum or nonmagnetic stainless steel to receive screw threads or provide standard non-corrosive pressed-in splined grommet nuts.

2. Exposed Fasteners: Except where unavoidable for application of hardware, do not use exposed fasteners. For application of hardware, use fasteners that match the finish of the member or hardware being fastened, as appropriate.

C. Anchors, Clips, and Window Accessories: Fabricate anchors, clips, and window accessories of aluminum, nonmagnetic stainless steel, or hot-dip zinc-coated steel or iron complying with the requirements of DIN 1748; provide sufficient strength to withstand design pressure indicated. As a minimum provide 3 anchors on each side of the frame.

D. Compression-Type Glazing Strips and Weatherstripping: Unless otherwise indicated, and at the manufacturer's option, provide compressible stripping for glazing and weatherstripping such as molded EPDM or neoprene gaskets.

E. Sealant: For sealants required within fabricated window units, provide type recommended by the manufacturer for joint size and movement. Sealant shall remain permanently elastic non-shrinking, and non-migrating. Comply with Sealants of these specifications for selection and installation of sealants.

F. Wire Fabric Insect Screen shall be permanently fixed to the exterior.

4.9.1.2 Hardware

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Provide the manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum and of sufficient strength to perform the function for which it is intended.

4.9.1.3 Fixed, Casement, Projected and Sliding Windows

Provide window units meeting UL 752, level 5, but no less than 16 mm laminated single glazed. This standard shall apply to all window units within guard shack, guard house, guard tower, and guard rooms in Headquarters Building. Provide cam action sweep sash lock and keeper at meeting rails. All other glazing shall be minimum 5mm laminated single glazed.

4.9.1.4 Fabrication

Provide aluminum windows with factory finish in all buildings to fit the masonry openings. Window openings shall be provided with insect screening permanently fixed to the exterior. Provide a locking device on the interior of each window. Provide anchors on each side of the frame into the adjoining masonry, 3 on each side. Provide weather stripping system for all exterior windows and doors.

4.9.1.5 Finishes

Apply baked enamel in compliance with paint manufacturer's specifications for cleaning, conversion coating, and painting.

Color: Selections by Contracting Officer

4.9.1.6 Inspection

Inspect openings before beginning installation. Verify that rough or masonry opening is correct and the sill plate is level. Masonry surfaces shall be visibly dry and free of excess mortar, sand, and other construction debris.

4.9.1.7 Installation

Comply with manufacturer's specifications and recommendations for installation of window units, hardware, operators, and other components of the work. Set window units plumb, level, and true to line, without warp or rack of frames or sash. Provide proper support and anchor securely in place. Set sill members and other members in a bed of compound or with joint fillers or gaskets, as shown, to provide weathertight construction. Refer to the Sealant sections for compounds, fillers, and gaskets to be installed concurrently with window units. Coordinate installation with wall flashings and other components of the work.

4.9.1.8 Adjusting

Adjust operating sash and hardware to provide a tight fit at contact points and at weatherstripping for smooth operation and a weathertight closure.

4.9.1.9 Cleaning

Clean aluminum surfaces promptly after installation of windows. Exercise care to avoid damage to protective coatings and finishes. Remove excess glazing and sealant compounds, dirt, and other substances. Lubricate hardware and other moving parts.

4.9.2 Doors

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Generally, doors shall be hollow metal doors, sizes as shown on the drawings with hollow metal frames to match door masonry openings. All glazed doors shall have 6 mm tempered or laminated glass glazing in the upper half of the door. Heavy gauge metal exterior doors are required for higher security areas. Commercial duty lock sets and hardware shall be used on all doors. Install required louvers, as called for in paragraph 6, in the lower portion of the door. Provide 3 hinges on all doors. Provide door handles and locksets that can be locked with a key on all doors. Coordinate the final keying schedule with Contracting Officer prior to ordering lock sets. Generally each building should have 8 master keys fitting all locks, 8 sub-master keys fitting all exterior doors and 3 keys each for each interior door. Include 25% spare key blanks for the amount of keys provided per building. Provide numbering system identifying key to associated room door. All glazing in or adjacent to doors shall be tempered per IBC. Provide weather stripping system for all exterior doors. Submit shop drawings together with lock sets for approval. Door hardware sets shall be provided as follows:

HW-1

1-1/2 pr Hinges, A5111
 1 ea Lockset, F04 Entry Lock w/levers, Grade 1, Exit
 Devices
 1 ea Door Closer, C02061
 1 ea Threshold, J32130

HW-2

3 pr Hinges, A5111
 2 ea Exit Device, Conc Vert Rod,
 F04 w/Levers, Grade 1
 2 ea Door Closers, C02061
 1 ea Threshold, J32130
 1 ea Removable Astragal

HW-3

1-1/2 pr Hinges, 8112
 1 ea Latch Set, F01 w/Levers, Grade 1
 1 ea Door Closer, C02061
 3 ea Silencers

HW-4

1-1/2 pr Hinges, A8112
 1 ea Lockset, F05
 1 ea Stop, L02101 or L02161
 3 ea Silencers

HW-5

1-1/2 pr Hinges, 8112
 1 ea Door Pull, J405
 1 ea Door Closer, C02051
 1 ea Stop, L02101 or L02161
 3 ea Silencers
 1 ea Kick Plate, J102
 1 ea Mop Plate, J103
 1 ea Marble Threshold

HW-6

1-1/2 pr Hinges, 8112
 1 ea Lockset, F07 Storeroom Lock
 1 ea Stop, L02101 or L02161
 3 ea Silencers

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HW-7
1-1/2 pr Hinges, A8112
1 ea Lockset, F02
1 ea Stop, L02101 or L02161
3 ea Silencers
1 ea Marble Threshold

HW-8
Heavy Duty Steel Door
1-1/2 pr Hinges A8112
1 ea Heavy Duty Dead Bolt Lock

HW-9 Standard Hardware as specified by door manufacturer

HW-10 Standard Hardware by closet door manufacturer

HW-11
1-1/2 pr Hinges A8112
1 ea Heavy Duty Dead Bolt Lock – see paragraph 4.9.2.1 for prison cell door

4.9.2.1 Steel Doors (Prison Cell)

SDI A250.8, except as specified otherwise. Prepare door to receive specified hardware. Door shall be as indicated. Door shall be constructed using heavy gauge steel. The holding cell will have 11 gauge steel door with a dead-bolt lock. The door shall have a pass-through slot for passing food trays with a hinged cover lockable from the outside. Built into the bottom of the door shall be a 0.3m wide by 0.5m tall door for passing a bucket in and out with a hinged cover lockable from the outside.

4.9.2.1.1 Standard Steel Frames

SDI A250.8, except as otherwise specified. Form frames to sizes and shapes indicated, with welded corners or knock-down field-assembled corners. Provide steel frames for doors, transoms, and mullions unless otherwise indicated.

4.9.2.1.2 Welded Frames

Continuously weld frame faces at corner joints. Mechanically interlock or continuously weld stops and rabbets. Grind welds smooth.

4.9.2.1.3 Not Used

4.9.2.1.4 Stops and Beads

Form stops and beads from 0.9 mm thick steel. Provide for other openings in standard steel frames. Secure beads to frames with oval-head, countersunk Phillips self-tapping sheet metal screws or concealed clips and fasteners. Space fasteners approximately 300 to 400 mm on centers. Miter molded shapes at corners. Butt or miter square or rectangular beads at corners.

4.9.2.1.5 Anchors

Provide anchors to secure the frame to adjoining construction. Provide steel anchors, zinc-coated or painted with rust-inhibitive paint, anchors not lighter than 1.2 mm thick.

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4.9.2.1.5.1 Wall Anchors

Provide at least three anchors for each jamb. For frames which are more than 2285 mm in height, provide one additional anchor for each jamb for each additional 760 mm or fraction thereof.

- a. Masonry: Provide anchors of corrugated or perforated steel straps or 5 mm diameter steel wire, adjustable or T-shaped;
- b. Completed openings: Secure frames to previously placed concrete or masonry with expansion bolts

4.9.2.1.5.2 Floor Anchors

Provide floor anchors drilled for 10 mm anchor bolts at bottom of each jamb member. Where floor fill occurs, terminate bottom of frames at the indicated finished floor levels and support by adjustable extension clips resting on and anchored to the structural slabs.

4.9.2.1.6 Hardware Preparation

Provide minimum hardware reinforcing gages as specified in ANSI A250.6. Drill and tap doors and frames to receive finish hardware. Prepare doors and frames for hardware in accordance with the applicable requirements of SDI A250.8 and ANSI A250.6. For additional requirements refer to BHMA A115. Drill and tap for surface-applied hardware at the project site. Build additional reinforcing for surface-applied hardware into the door. Locate hardware in accordance with the requirements of SDI A250.8, as applicable. Punch door frames, with the exception of frames that will have weatherstripping or lightproof or soundproof gasketing, to receive a minimum of two rubber or vinyl door silencers on lock side of single doors and one silencer for each leaf at heads of double doors. Set lock strikes out to provide clearance for silencers.

4.9.2.1.7 Finishes

All surfaces of doors and frames shall be thoroughly cleaned, chemically treated and factory primed with a rust inhibiting coating as specified in SDI A250.8, or paintable A25 galvanized steel without primer. Where coating is removed by welding, apply touchup of factory primer.

4.9.2.1.8 Fabrication and Workmanship

Finished doors and frames shall be strong and rigid, neat in appearance, and free from defects, waves, scratches, cuts, dents, ridges, holes, warp, and buckle. Molded members shall be clean cut, straight, and true, with joints coped or mitered, well formed, and in true alignment. Dress exposed welded and soldered joints smooth. Design door frame sections for use with the wall construction indicated. Corner joints shall be well formed and in true alignment. Conceal fastenings where practicable. On wraparound frames for masonry partitions, provide a throat opening 3 mm larger than the actual masonry thickness. Design other frames in exposed masonry walls or partitions to allow sufficient space between the inside back of trim and masonry to receive calking compound.

4.9.2.1.8.1 Grouted Frames

For frames to be installed and to be filled with mortar or grout, fill the stops with strips of rigid insulation to keep the grout out of the stops and to facilitate installation of stop-applied head and jamb seals.

4.9.2.1.12 Installation

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4.9.2.1.12.1 Frames

Set frames in accordance with SDI 105. Plumb, align, and brace securely until permanent anchors are set. Anchor bottoms of frames with expansion bolts or powder-actuated fasteners. Build in or secure wall anchors to adjoining construction. Backfill frames with mortar. When an additive is provided in the mortar, coat inside of frames with corrosion-inhibiting bituminous material.

4.9.2.1.12.2 Doors

Hang doors in accordance with clearances specified in SDI A250.8. After erection and glazing, clean and adjust hardware.

4.9.2.1.13 Protection and Cleaning

Protect doors and frames from damage. Repair damaged doors and frames prior to completion and acceptance of the project or replace with new, as directed. Wire brush rusted frames until rust is removed. Clean thoroughly. Apply an all-over coat of rust-inhibitive paint of the same type used for shop coat. Upon completion, clean exposed surfaces of doors and frames thoroughly. Remove mastic smears and other unsightly marks.

4.9.2.1.14 Weatherstripping

Provide weatherstripping that is a standard cataloged product of a manufacturer regularly engaged in the manufacture of this specialized item. Weather stripping shall be looped neoprene or vinyl held in an extruded non-ferrous metal housing. Air leakage of weather stripped doors shall not exceed 0.003125 cubic meter per second of air per square meter of door area when tested in accordance with ASTM E 283

4.9.2.1.15 Prefitting

At the Contractor's option, doors may be provided factory pre-fit. Doors shall be sized and machined at the factory by the door manufacturer in accordance with the standards under which they are produced. The work shall include sizing, beveled edges, mortising, and drilling for hardware and providing necessary beaded openings for glass and louvers. Provide the door manufacturer with the necessary hardware samples, and frame and hardware schedules as required to coordinate the work.

4.9.2.1.16 Finishes

Provide door finish colors as selected by the Contracting Officer from the color selection samples.

4.9.2.1.17 Installation

Before installation, seal top and bottom edges of doors with the approved water-resistant sealer. Seal cuts made on the job immediately after cutting using approved water-resistant sealer. Fit, trim, and hang doors with a 2 mm minimum, 3 mm maximum clearance at sides and top, and a 5 mm minimum, 6 mm maximum clearance over thresholds. Provide 10 mm minimum, 11 mm maximum clearance at bottom where no threshold occurs. Bevel edges of doors at the rate of 3 mm in 50 mm. Door warp shall not exceed 6 mm when measured in accordance with WDMA I.S. 1-A.

4.9.2.1.18 Weather stripping

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Install doors in strict accordance with the manufacturer's printed instructions and details. Weather strip exterior swing-type doors at sills, heads and jambs to provide weather tight installation. Apply weather stripping at sills to bottom rails of doors and hold in place with a brass or bronze plate. Apply weather stripping to door frames at jambs and head. Shape weather stripping at sills to suit the threshold.

4.9.2.2 Overhead Rolling Doors

Doors shall be fabricated from interlocking cold-rolled slats, designed to withstand building wind loading and be installed with wind locks. Slat shall be continuous for the width of the door. For doors not exceeding 4.27 m, slats shall be flat-profile design, with a depth of not less than 15.9 mm, a center to center width not more than 69.9mm, and not less than a 1.21mm uncoated thickness. Provide weather stripping for door-head and door jamb guides, and a bottom astragal. Weather stripping and astragal shall be natural rubber or neoprene rubber. Curtain jamb guides shall be fabricated from a combination of steel angles of sufficient size to retain curtain against the specified wind. Guides shall be fabricated from structural quality steel angles. Door shall have manufacturer's standard five pin tumbler locks; keyed. Doors shall be counterbalanced by an adjustable, steel, helical torsion spring mounted around a steel shaft in a spring barrel and connected to the door curtain with the required barrel rings. Hoods shall be fabricated from steel sheets with minimum yield strength of 227.5 Mpa. Steel slats and hoods shall be hot-dip galvanized G60 in accordance with ASTM A 653/A653M, and shall be treated for paint adhesion and shall receive a factory baked-on finish coat. Aluminum slats and hoods shall receive a mill finish. Surfaces other than slats, hood, and faying surfaces shall be cleaned and treated to assure maximum paint adherence and shall be given a factory dip or spray coat of rust inhibitive metallic oxide or synthetic resin primer. Color shall be selected from manufacturer's standard colors. Color listed is not intended to limit the selection of equal colors from other manufacturers.

Counterbalance-barrel components shall be as follows:

- Spring barrels shall be hot-formed structural-quality carbon steel, welded or seamless pipe. Pipe shall be of sufficient diameter and wall thickness to limit deflection to a maximum of 1/360 of the span.
- Counterbalance springs shall be oil-tempered helical steel springs designed with a safety factor of 4. Springs shall be sized to counterbalance the weight of the curtain at any point of its travel, and shall be capable of being adjusted to counterbalance not less than 125% of the normal curtain load. Spring adjustment shall be arranged in such a way that the curtain need not be raised or lowered to secure the adjustment.
- Counterbalance shafts shall be case-hardened steel of the proper size to hold the fixed ends of the spring and carry the torsional load of the spring.

Barrel plugs shall be fabricated from cast steel machined to fit the ends of the barrel. Plugs shall secure the ends of the spring to the barrel and the shaft.

Barrel rings shall be fabricated from malleable iron of the proper involute shape to coil the curtain in a uniformly increasing diameter.

Shaft bearings shall be factory sealed ball bearings of the proper size for load and shaft diameters.

Door operators shall consist of a endless steel hand chain, chain-pocket wheel and guard, and a geared reduction unit of at least a 3:1 ratio. Required pull for operation shall not exceed 16 kg. Chain hoists shall have a self-locking mechanism allowing the curtain to be stopped at any point in its upward/downward travel and to remain in that position until moved to the fully open or closed position. Hand chains shall be cadmium-plated alloy steel with a yield point of at least three times the required hand-chain pull.

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Pretreated zinc-coated steel sheets shall be given the manufacturer's standard prime coat and an enamel finish coat applied to the exterior face after forming.

After installation, doors, track, and operating equipment will be examined and tested for general operation and weather against the specified wind pressure, and weather resistance. Doors that fail the required tests shall be adjusted and retested. Doors that have been adjusted and fail subsequent tests shall be removed and replaced with new doors at no additional cost.

4.9.3 Glazing

ASTM C 1036, or ASTM C 1172 or equal. Acceptable manufacturer: Gürsan or equal

4.9.3.1 Tempered Glass

Tempered glass shall be kind FT fully tempered flat type. Class 1 clear, condition A uncoated surface, Quality q3-glazing select, conforming to ASTM, DIN, BS or EN standards. Color shall be clear.

4.9.3.2 Plastic Glazing (Acrylic Sheets)

ASTM D 4802, Type II, heat resistant, clear and smooth on both sides, ultraviolet stabilized, scratch resistant, 5 mm thick.

4.9.3.3 Glazing Accessories

4.9.3.3.1 Sealant

Sealant shall be elastomeric conforming to ASTM, DIN, BS, or EN standards. Type S or M, Grade NS, Class 12.5, Use G. Color of sealant shall be as selected from manufacturer's full range of standard colors by Contracting Officer.

4.9.3.3.2 Glazing Gaskets

Glazing gaskets shall be extruded with continuous integral locking projection designed to engage into metal glass holding members to provide a watertight seal during dynamic loading, building movements and thermal movements. Glazing gaskets for a single glazed opening shall be continuous one-piece units with factory-fabricated injection-molded corners free of flashing and burrs. Glazing gaskets shall be in lengths or units recommended by manufacturer to ensure against pull-back at corners.

4.9.3.3.3 Fixed Glazing Gaskets

Fixed glazing gaskets shall be closed-cell (sponge) smooth extruded compression gaskets of cured elastomeric virgin neoprene compounds conforming to ASTM, DIN, BS. Or EN standards.

4.9.3.3.4 Wedge Glazing Gaskets

Wedge glazing gaskets shall be high-quality extrusions of cured elastomeric virgin neoprene compounds, ozone resistant, conforming to ASTM, DIN, BS, or EN standards.

4.9.3.3.5 Putty and Glazing Compound

Glazing compound shall conform to ASTM, DIN, BS, or EN standards for face-glazing metal sash. Putty shall be linseed oil type conforming to DIN, BS, or EN standards for face-glazing primed

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wood sash. Putty and glazing compounds shall not be used with insulating glass or laminated glass.

4.9.3.3.6 Setting and Edge Blocking

Neoprene setting blocks shall be dense extruded type conforming to ASTM, DIN, BS, or EN standards. Silicone setting blocks shall be required when blocks are in contact with silicone sealant. Profiles, lengths and locations shall be as required and recommended in writing by glass manufacturer.

4.9.3.4 Preparation

Openings and framing systems scheduled to receive glass shall be examined for compliance with glass manufacturer's recommendations including size, squareness, offsets at corners, presence and function of weep system, face and edge clearance requirements and effective sealing between joints of glass-framing members. Detrimental materials shall be removed from glazing rabbet and glass surfaced and wiped dry with solvent. Glazing surfaces shall be dry and free of frost.

4.9.3.5 Installation

Glass and glazing work shall be performed in accordance with, glass manufacturer's instructions and warranty requirements. Glass shall be installed with factory labels intact and removed only when instructed. Edges and corners shall not be ground, nipped or cut after leaving factory. Springing, forcing or twisting of units during installation will not be permitted.

4.9.3.6 Cleaning

Upon completion of project, outside surfaces of glass shall be washed clean and the inside surfaces of glass shall be washed and polished in accordance with glass manufacturer's recommendations.

4.9.3.7 Protection

Glass work shall be protected immediately after installation. Glazed openings shall be identified with suitable warning tapes, cloth, or paper flags, attached with non-staining adhesives. Reflective glass shall be protected with a protective material to eliminate any contamination of the reflective coating. Protective material shall be placed far enough away from the coated glass to allow air to circulate to reduce heat buildup and moisture accumulation on the glass. Glass units which are broken, chipped, cracked, abraded, or otherwise damaged during construction activities shall be removed and replaced with new units.

4.10 FINISHES

Provide color boards with all materials for COR approval prior to ordering materials.

4.10.1 The exterior of all buildings shall be stucco. A temperature of between 4 and 27 degrees C shall exist for a period of not less than 48 hours prior to application of plaster and for a period of at least 48 hours after plaster has set. Control joints shall be designed for expansion and contraction of plaster work due to thermal exposure. Control joints shall comprise of back to back casing beads. Install new stucco in 2 coats. The first coat shall be a scratch coat approximately 1 cm thick. Allow 7 days to cure. The second coat shall be finish stucco, smooth finish, approximately 1 cm thick. Allow 7 days to cure before painting. Stucco showing oversanding, cracks, blisters, pits, checks, discoloration or other defects is not acceptable. Defective plaster work shall be removed and replaced with new plaster at the expense of the Contractor. Patching

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of defective work will be permitted only when approved by the Contracting Officer. Patching shall match existing work in texture and color. Paint shall be designated for exterior use, with less than .06% lead by weight. Stucco shall be painted with one coat of primer and two coats of finish paint, color to be selected by the Contracting Officer from the color board provided by the Contractor.

4.10.2 Interior walls shall be plaster applied in a similar manner as exterior stucco. Paint with 2 coats of semi-gloss off-white with less than .06% lead by weight color to be selected by the Contracting Officer from the color board provided by the Contractor.

4.10.3 Ceilings shall be plaster applied over cast-in-place concrete slabs or beams. Paint ceiling with 2 coats of flat white, with less than .06% lead by weight.

4.10.4 Not Used

4.10.5 Not Used

4.10.6 Exposed exterior steel trim, frames, doors and pipe railings: Paint with one coat water-based primer, with 2 coats of water-based paint, color to be selected by the Contracting Officer from the color board provided by the Contractor.

4.10.7 Not Used

4.10.8 Tile: Tile work shall not be performed unless the substrate and ambient temperature is at least 10 degrees C and rising. Temperature shall be maintained above 10 degrees C while the work is being performed and for at least 7 days after completion of work. Upon completion, tile surfaces shall be thoroughly cleaned in accordance with manufacturer's approved cleaning instructions. Acid shall not be used for cleaning glazed tile. Floor tile with resinous grout or with factory mixed grout shall be cleaned in accordance with instructions of the grout manufacturer. After the grout has set, tile wall surfaces shall be given a protective coat of a non-corrosive soap or other approved method of protection.

4.10.8.1 Floors in wet areas shall be ceramic tile. Joints shall be 2-3mm. Waterproof gray grout shall be applied the full depth of the tile. Floors shall slope, minimum 1/50, to floor drains. Slope shall be obtained with sloping mortar bed of minimum 2cm thickness. Provide continuous waterproofing membrane beneath sloping mortar bed, turn up wall 30cm behind wall base. Membrane shall be fully sealed at joints and shall shed water into body of floor drain. Color of tile shall be selected by the Contracting Officer from samples provided by the Contractor.

4.10.8.2 Floors in administration areas/living quarters and corridors shall be 30cm x 30cm terrazzo tile with thin set mortar. Joints shall be 2-3mm. Waterproof gray grout shall be applied the full depth of the tile. Color of tile shall be selected by the Contracting Officer from samples provided by the Contractor.

4.10.8.3 Walls in wet areas shall be tiled with 150mm x 150mm glazed ceramic tile up to 2.2 meters above the floor to include interior of toilet stalls, showers and behind sinks. Joints shall be 2-3mm. Waterproof gray grout shall be applied full depth of the tile. Grout shall cure for 72 hours and then be sealed with a commercial grout sealant in two coats. Color of tile shall be selected by the Contracting Officer from samples provided by the Contractor.

4.10.9 See Finish Schedule for finish types.

4.10.10 Kitchen shall be covered with quarry tile flooring. Walls in kitchen shall be ceramic tile up to 2.2 meters above finished floor. Floor in dining area shall be terrazzo tile.

4.11 SPECIALTIES

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4.11.1 Mirrors

0.6m x 0.9m, 6mm plate glass, shall be mounted above all lavatories. Mount bottom of mirrors 1.1m above finished floor.

4.11.2 Other toilet accessories shall be as shown on drawings.

4.12 STANDARDS

The Contractor should use the following American standards to provide sound structural design if local standards are not available, relevant, or applicable. The Contractor shall follow American Concrete Institute Standards for design and installation of all concrete structures.

Concrete	280.0 kg./sq.cm cylinder strength @ 28 days (ASTM-. C 31M)
Steel Reinforcement	4218.0 kg./sq.cm($F_y = 60.0$ ksi), yield strength.
Welded Wire Fabric	ASTM A185
Anchor Bolts	ASTM A307 using A36 steel.
Concrete Masonry Units	ASTM C90, Type I (normal wt, moisture Cntrl).
Mortar	ASTM C270, Type S (Ultimate compressive strength of 130.0
kg/sq. cm.)	
Proportion	1 part cement, 0-1/2 part lime and 4-1/2 parts aggregate
Grout	ASTM C476 (Slump between 200 mm to 250 and Compressive
Strength	14 MPa (2000 psi) at 28 days.
Joint Reinforcement	Standard 9 gage minimum, Ladder Type
Structural Steel	ASTM A36: 2530.0 kg./sq.cm ($F_y = 36,000$ psi)
Welding	AWS (American Welding Society) D1.1-2002.

5. STRUCTURAL

5.1 GENERAL

The project consists of various structures. The new buildings shall be constructed as shown on the drawings and stated in the specifications. However, the building foundations have been designed based on assumed geotechnical design parameters. These assume parameters are shown on the foundation plans and stated in Paragraph 5.8, FOUNDATIONS. The contractor shall perform a geotechnical investigation as required in paragraph 2.1 GEOTECHNICAL, FOUNDATIONS AND SURVEY, to verify that the foundations as designed will perform satisfactory. If the contractor determines the building foundations as designed will not function satisfactory, the contractor shall redesign the foundations accordingly. The contractor is responsible for the foundation design and construction of the foundations.

5.2 DESIGN

Foundation design shall be performed and design documents signed by a registered professional structural engineer. Calculations shall be in SI (metric) units of measurements. All components of the building shall be designed and constructed to support safely all loads without exceeding the allowable stress for the materials of construction in the structural members and connections.

5.3 DEAD AND LIVE LOADS

Dead loads consist of the weight of all materials of construction incorporated in the buildings. Live loads used for design shall be in accordance with the American Society of Civil Engineers, ASCE

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STANDARD, and Minimum Design Loads for Buildings and Other Structures, ASCE 7, edition as referenced herein.

5.4 WIND LOADS

Wind loads shall be calculated in accordance with ASCE 7 using a "3-second gust" wind speed of 125 km/hr. All facilities shall be classified as a minimum of Category II in accordance with Table 1-1 in ASCE 7, referenced herein.

5.5 SEISMIC

The building and all parts thereof shall be designed for the seismic requirements as defined by the International Building Code referenced herein. Site-specific data: Spectral ordinates $SS=1.65g$ and $S1=0.75g$.

5.6 STRUCTURAL CONCRETE

Concrete structural elements shall be designed and constructed in accordance with the provisions of the American Concrete Institute, Building Code Requirements for Structural Concrete, ACI 318, latest edition. A minimum cylinder compressive strength of 4000 psi (28 mPa) shall be used for design and construction of all concrete. Reinforcing steel shall be deformed bars conforming to American Society for Testing and Materials (ASTM) publication ASTM A 615, Deformed and Plain Billet-Steel Bars for Concrete Reinforcement. Concrete at or below grade shall have maximum water-cement ratio of 0.40. No concrete shall be placed when the ambient air temperature exceeds 32 degrees C (90 degrees F) unless an appropriate chemical retardant is used. In all cases when concrete is placed at 32 degrees C (90 degrees F) or hotter it shall be covered and kept continuously wet for a minimum of 48 hours. Concrete members at or below grade shall have a minimum concrete cover over reinforcement of 3" (75 millimeters).

5.7 MASONRY

Masonry shall be designed and constructed in accordance with the provisions of Building Code Requirements for Masonry Structures, ACI 530/ASCE 5/TMS 402, latest editions. CMU shall conform to ASTM C 90. Mortar shall be Type S and conform to ASTM C 270, latest edition. Masonry shall not be used below grade, unless for fully reinforced and grouted foundation stem walls. All cells of exterior CMU walls shall be fully grouted.

5.8 FOUNDATIONS

The foundations shall be constructed by using reinforced concrete materials. The foundations system for the one-story building shall be spread footings for individual column footings and grade beams as shown on the drawings. Minimum length and width of spread footings shall be as shown on the drawings. A bearing capacity of 0.75 kg/sq. cm was assumed and used in designing the building foundations. The allowable bearing pressure shall be determined by the Contractor after performing his geotechnical investigation. The maximum allowable settlement between footings shall be less than 2.5 cm. It is the contractors' responsible to perform a geotechnical investigation and determine if the foundations as shown and designed will perform satisfactory, see paragraph 2.1 GEOTECHNICAL, FOUNDATIONS AND SURVEY. If the contractor determines the foundations as designed will not perform satisfactory, the contractor shall redesign the foundations accordingly.

6. GEOTECHNICAL

Existing geotechnical information is not available at the project site. Any site-specific geotechnical data required to develop foundations, materials, earthwork, and other geotechnical related design

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and construction activities for this project shall be the Contractor's responsibility. The Contractor shall develop all pertinent geotechnical design and construction parameters by appropriate field and laboratory investigations and analyses.

7. MECHANICAL

7.1 GENERAL

Heating and cooling shall be provided by the use of split system heat pumps, wood stoves, multi-speed ceiling fans or electric unit heaters as indicated on the drawings. Wood stoves shall be installed in accordance with local standards, complete with exhaust stacks to ventilate smoke to the outside environment.

7.2 SPECIALIST SUB-CONTRACTORS QUALIFICATIONS

The heating/ventilation work shall be executed by an air-conditioning specialist sub-contractor experienced in the construction of these types of systems.

7.3 CODES, STANDARDS AND REGULATIONS

The equipment, materials and works covered under the heating, ventilation and air-conditioning services shall conform to the referenced standards, codes and regulations where applicable except where otherwise mentioned under each particular clause.

7.4 DESIGN CONDITIONS

Noise levels inside occupied spaces generated by HVAC systems shall not exceed NC 35.

7.4.1 THERMAL PERFORMANCE

Assemblies shall meet the requirements of TI-800, Design Criteria, UFC 3-400-01 Design: Energy Conservation, and ASHRAE Standard 90.1, latest editions, but shall meet the following minimum requirements:

Assembly	Minimum Thermal Value
exterior walls (above grade)	RSI 2.288 (R 13)
ceilings/roof	RSI 6.688(R 38)
basement wall	RSI
floor (over unheated space)	RSI 5.28 (R 30)
exterior doors	RSI 0.25 (R 1.43)
exterior windows/ (glazing within doors)	RSI 0.308(R 1.75)

7.5 VENTILATION AND EXHAUST SYSTEMS

All fans shall be used for building ventilation and pressurization with capacities to be selected for minimum noise level generated. Unit mounted fans either used for supply or exhaust shall be centrifugal forward curved, backward inclined, or airfoil fans with non-overloading characteristics of high efficiency and quiet running design. The fans shall be of the heavy-duty type with durable construction and proved performance in a desert environment. Each exhaust fan shall be provided with shut-off dampers which close automatically when the fan is not running. Also, each fan shall be complete with vibration isolator, external lubricators where bearings require routine

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lubrication, and all accessories and sound attenuators as necessary.

7.5.1 Submittals

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer's data including performance characteristics at design conditions; catalog cuts showing dimensions, performance data, electrical requirements, compliance with standards as stated in paragraph CODES, STANDARDS AND REGULATIONS; drawings indicating location and installation details.

7.6 ELECTRIC RESISTANCE HEATERS

7.6.1 Unit Heater

Provide a self-contained electric heating unit, suspended from ceiling or structure, with fan and heating elements. Provide control-circuit terminals and single source of power supply with disconnect. Heating wire element shall be nickel chromium. Include limit controls for overheat protection of heaters. Provide tamper resistant integral thermostat.

7.6.2 Cabinet Heater

Provide a self-contained electric heating unit, recessed mounted in wall or structure, with fan and heating elements. Provide control-circuit terminals and single source of power supply with disconnect. Heating wire element shall be nickel chromium. Include limit controls for overheat protection of heaters. Provide tamper resistant integral thermostat.

7.6.2 Submittals

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer's data including performance characteristics at design conditions; catalog cuts showing dimensions, performance data, electrical requirements, compliance with standards as stated in paragraph CODES, STANDARDS AND REGULATIONS; drawings indicating location and installation details.

7.7 CEILING FANS

7.7.1 Ceiling Fan

Provide 1320mm blade ceiling fans at one per 40 square meters of floor space. Fans shall have reversible motors. Center or distribute evenly in room. Coordinate placement with the lighting plan to prevent conflict or casting shadows. Fan mount shall be flush, standard, or angle mount depending on ceiling height. Fan shall be mounted such that the fan blade is approximately 2.44 meters above the finished floor. The fan shall be provided with out light kit. The finish shall be factory painted white. The controls shall be from either a single pole switch or from two 3 way switches to provide on/off operation. The electrical supply shall be 220volts, single phase, and 50 hertz. Install per manufacturers' instructions.

7.7.2 Submittals

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer's data including performance characteristics at design conditions; catalog cuts showing dimensions, performance data, electrical requirements, compliance with standards as stated in paragraph CODES, STANDARDS AND REGULATIONS; drawings indicating location and installation details.

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7.8 SPLIT SYSTEM HEAT PUMPS

7.8.1 Split System Heat Pumps

Unit shall be a split type, factory made assembly, consisting of an indoor section and an outdoor section, designed to work together to provide year round heating and cooling, air-circulating, ventilating, air-cleaning, and dehumidifying functions. The separate sections shall be standard commercial products of the same manufacturer, and shall have ratings based on their being used as matched assemblies.

Minimum Coefficient of Performance (COP) shall be 2.9. Minimum Seasonal Energy Efficiency Ratio (SEER) shall be 10. Refrigerant shall be non-CFC.

7.8.1.1 Indoor Section

Indoor section shall be a factory assembled unit consisting of indoor coil, centrifugal blower, motor, motor controls, filters, electric resistance heaters, enclosure, and condensate pan, with controls, relief devices, piping, wiring, controls and accessories required for operation. Outlet grille shall be constructed to permit adjustable directional air flow. Unit shall be wall mounted console type construction. The sound level rating shall be less than 45 decibels (dB).

7.8.1.2 Outdoor Section

Outdoor section shall be a factory assembled unit consisting of outdoor coil, propeller type fans arranged for horizontal discharge, refrigerant circuit with filter-dryer, and hermetically sealed compressor with crankcase heater, internal overload protection and pressure relief valve, all contained in a weather resistant outer casing. Defrost controls, and necessary tubing, piping, controls, control circuits, and required accessories shall be provided. System shall be factory pre-charged with oil and refrigerant. Air inlet and discharge grilles with bird screens shall be provided. The sound level rating shall be less than 60 dB. The unit shall be mounted on a fabricated metal stand a minimum of 300mm above the ground.

7.8.2 Electrical Requirements

Each section shall be equipped with a main power panel and shall include complete branch circuit protection for every electrical component. Main power panel shall completely protect the unit from primary single phasing and over current. Fuses and protective devices shall be provided by the manufacturer and installed at the factory. All components of the main power panel and all control devices shall be UL listed. Wiring shall be in accordance with UL and NFPA 70 requirements. Equipment shall operate on 230 volt, single phase, 50 hertz electrical service.

7.8.3 Controls

A switch with fan/off/cool positions shall be mounted in the unit or with the remote thermostat. Thermostat shall be remotely mounted where shown on the drawing.

Building wall penetrations shall be carefully made so as not to deteriorate the structural integrity of the wall system. The Contractor shall consult with the building manufacturer, if possible, to determine the best way to penetrate the wall. If the building manufacturer is not available, a structural engineer shall be consulted. In either case, the recommendations of the engineer shall be strictly adhered to.

7.8.4 Submittals

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer's data including performance characteristics at design conditions;

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catalog cuts showing dimensions, performance data, electrical requirements, compliance with standards as stated in paragraph CODES, STANDARDS AND REGULATIONS; drawings indicating location and installation details.

7.9 Wood Stove Heating

7.9.1 Wood Stove Heating

Provide Cast Iron stoves, minimum cast iron wall thickness shall be 5mm. Install with adequate clearances per manufactures installation guide. Route the chimney runs inside the building envelope (inside the heated space) so air and flue gases stay at least as warm as the air in the building until they are expelled outside. The chimney shall penetrate the highest part of the building envelope so the chimney functions better. The chimney shall rise at least 60 cm (24 inches) above the roof ridge and its top is clear of obstacles to wind flow so it can produce stable draft and it has a chimney (rain) cap because without one any chimney is vulnerable to adverse wind pressures. The chimney flue shall be insulated and be the correct size for the appliance so flue gases are kept warm and flow quickly through the system. The flue pipe, if used, shall run straight up from the appliance to the chimney and the chimney has no offsets because each change in direction presents resistance to flow. The appliance and venting system shall be reasonably well-sealed to prevent leaks that introduce cool air and make the system more vulnerable to adverse pressures. The stove shall be certified for low smoke emissions or have equivalent characteristics so it is unlikely to smolder. The system shall be installed in a building that has a balanced ventilation system. There shall be no exhaust fan in the stove exhaust.

7.9.2 Submittals.

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer's data including performance characteristics at design conditions; catalog cuts showing dimensions, performance data; drawings indicating location and installation details.

7.10.A Propane Stove Cooking

Cooking area shall be provided canopy type exhaust only kitchen hoods and associated exhaust fans. These exhaust hoods shall include baffle type aluminum filters to trap grease/oil. The exhaust fan sizing calculations should recognize the use of propane stoves in the kitchen. Sizing should accommodate all propane burning stoves running simultaneously. Additionally, the placement of the exhaust hood should allow enough clearance for an average sized male to stand on top of the stove platform unobstructed, for standing on the stove is common local cooking practice. The higher than average placement of the hood will require the extension of the lip of the hood out further than normal, in order to catch the majority of the smoke and adequately vent the area.

Make-up air for kitchen hood exhaust shall be pulled in from roof mounted, louvered, penthouse with intake air filter and from adjoining Kitchen/Dining areas.

7.10.B Wood Stove Cooking

Stove shall be constructed out of fire bricks and topped with 5mm thick cast iron countertop. Route the chimney runs inside the building envelope so air and flue gases stay at least as warm as the air in the building until they are expelled outside. . The minimum flue thickness shall be no less than 1.5mm black steel. The Contractor shall protect chimney by means of metal rails or masonry wall from damage from large pots during cooking. The chimney shall penetrate the highest part of the building envelope so the chimney functions better. The chimney shall rise at least 60 cm (24

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inches) above the roof ridge and its top is clear of obstacles to wind flow so it can produce stable draft and it has a chimney (rain) cap because without one, any chimney is vulnerable to adverse wind pressures. The chimney flue shall be insulated and be the correct size for the appliance so flue gases are kept warm and flow quickly through the system. The flue pipe, if used, shall run straight up from the appliance to the chimney and the chimney has no offsets because each change in direction presents resistance to flow. The appliance and venting system shall be reasonably well-sealed to prevent leaks that introduce cool air and make the system more vulnerable to adverse pressures. The system shall be installed in a building that has a balanced ventilation system. There shall be high exhaust fan in the stove exhaust. The Wood stove kitchen shall be well vented with louvers located high at walls on the building ends. The wood feeding doors shall be located on the outside of the building. Contractor must submit shop drawings for approval.

7.11 TESTS ON COMPLETION

After completion of the work, the Contractor shall demonstrate to the Contracting Officer that the installation is adjusted and regulated correctly to fulfill the function for which it is intended. The Contractor shall test, adjust, balance and regulate the section or sections of concern as necessary until the required conditions are obtained. Include tests for all interlocks, safety cutouts and other protective device to ensure correct functioning. All such tests shall be carried out and full records of the values obtained shall be prepared along with the final settings and submitted to the Contracting Officer in writing.

8. PLUMBING

8.1 SYSTEM REQUIREMENTS

Domestic water and waste systems shall be provided to each area with fixtures requiring water and/or waste connections such as toilets, etc. The entire water system shall include cold water to each fixture as well as to a water heater. Hot water shall be distributed to all kitchen sinks, showers, etc. as indicated. The water distribution and waste systems shall be in complete accordance with the requirements of the International Plumbing Code (IPC, latest edition). The Contractor shall furnish, install and test the domestic water supply system as shown on the drawings. Contractor shall install the domestic water tank system such that can be easily converted to a permanent system in the future. All water distribution system components exposed to the outdoors shall be provided with freeze protection to ensure water is available throughout the year.

8.2 PIPING MATERIALS

Domestic water shall be distributed by means of PVC (cold water only), CPVC (cold or hot water) or copper for the pressure to be utilized. PVC and CPVC shall not be used in areas where it will be exposed to outdoor sun.

8.3 FIXTURES

All plumbing fixtures shall be provided with p-traps and shall be vented to the roof per International Plumbing Code, latest edition.

8.3.1 Eastern Style Water Closet with Flush Tank

Provide acid resisting fired porcelain enameled cast iron water closet complete with rotating No-Hub 'P' trap and No-Hub coupling to meet piping requirements. Eastern Style water closet shall be furnished with integral non-skid foot pads and bowl wash down non-splashing flushing rim. The water closet shall be completely self supporting requiring no external mounting hardware and

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shall be flush with floor. The Eastern Style water closet shall incorporate waterproofing membrane flashing flange. Provide wall mounted faucet on the right hand side of the water closet stall as viewed from the in-use position. Toilets shall be oriented north and south. Toilets shall not face east or west.

8.3.2 Lavatories

All sinks shall be trough type constructed of block and concrete with ceramic tile exterior and lining capable of withstanding abuse. Faucets shall be chrome plated brass single lever mixing type.

8.3.3 Water Heater

Electric type water heaters shall conform to UL 174 with dual heating elements. Each element shall be 4.5 KW. The elements shall be wired so that only one element can operate at a time. Each water heater shall have controls with an adjustable range that includes 32 to 71 degrees C. Electrical wiring shall be installed per the NEC and the manufacturer's instructions. Piping and fittings for hot, cold, drain, and pressure temp connections shall be installed per the manufacturer's recommendations.

8.3.4 Plastic Shower Stalls

Provide one piece or four piece white solid acrylic pressure molded fiberglass reinforced plastic shower stalls. Shower stalls shall be scratch resistant, waterproof, and reinforced. Provide recessed type shower stalls approximately 914 mm wide, 914 mm front to rear, 1829 mm high, and 125 high mm high curb with shower stall bottom or feet firmly supported by a smooth level floor. Provide PVC shower floor drains and stainless steel strainers. Install shower stall in accordance with the manufacturer's written instructions. Provide smooth 100 percent silicone rubber white bathtub caulk between the top, sides, and bottom of shower stalls and bathroom walls and floors.

8.3.5 Scullery Sink (Kitchen Area)

Provide 14 gauge, type 304, (18-8) stainless steel, sink with drain board. Compartments shall be large enough to wash posts 1 meter in diameter. Sink shall be supported on four stainless steel legs. Sink shall have pre-drilled in backsplash at manufacturer for commercial faucet. Commercial faucet shall be solid brass construction, chrome finish, wall mount 203mm center arc tube.

8.3.6 Floor Drain and Shower Drain

Floor drains and shower drains shall consist of a galvanized body, integral seepage pan, and adjustable perforated or slotted chromium-plated bronze, nickel-bronze, or nickel-brass strainer, consisting of grate and threaded collar. Floor drains shall be cast iron except where metallic waterproofing membrane is installed.

8.3.7 Insulation

All domestic water pipe and fittings that are exposed and not inside an insulated wall, shall be insulated. In addition, all water pipe that is exposed shall also be covered with metal jacketing. Water piping exposed to outdoor conditions shall be provided with heat trace to prevent freezing.

8.3.8 Trench Type Floor Drain

Trench type floor drains shall consist of a cast iron or galvanized body, integral seepage pan, and slotted chromium-plated bronze, nickel-bronze, or nickel-brass grate. Grate shall be 300 mm

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wide and 2000 mm long.

8.4 Generator Fuel Storage

The work shall include the fabrication and installation of the entire fuel storage and distribution system. Tanks shall be skid mounted. Tanks of this type that have a capacity above 2640 L will be provided with either a dike or a spill containment system. The dike or spill containment system should have enough capacity for the entire contents of the tank plus 10 percent. Provide a molded neoprene isolation pad to isolate an aboveground tank from the concrete pad underneath. Steel tank supports specifically are prone to encounter premature rusting due to constant exposure to moisture and their incompatibility with concrete. Tank shall be designed and manufactured for horizontal installation. Tank shall be mounted on the tank manufacturer's standard support skid. Skid shall span the entire length of the tank and shall separate the tank from the reinforced concrete slab by a minimum of 200 mm. Indicate on the drawings the number and size of each tank man way required. Tanks of 3,780 to 45,430 L to capacity will be provided with 760 mm diameter man ways. Tanks larger than 45,430 L will be provided with 915 mm diameter man ways. Tanks 3,780 L and larger will be provided with a minimum of 1 tank man way to allow for internal tank access. Piping will not penetrate through access man ways. Tank shall be provided with a combination cleanout and gauge connection. Vent pipe sizing shall be not less than 32 mm nominal inside diameter. Vent shall be the rupture disc type calibrated to burst at 13.8 kPa pressure, and operate at 80 percent of burst setting. Tank shall be provided with an overflow alarm system. Tank shall be provided with 2 stick gauges graduated in m and mm. Stick gauge shall be of wood and treated after graduating to prevent swelling or damage from the fuel being stored. Each storage tank shall be provided with an automatic analog reading gauge which is directly mounted to a tank's man way cover. Provide an in-line centrifugal pump as part of the day tank package for fuel transfer from the bulk storage tanks to the day tank. Day tanks shall provide sufficient fuel for four hours of generator operation without refill. Provide cathodic protection for metal components. Storage tanks shall be handled with extreme care to prevent damage during placement and shall be installed in accordance with the manufacturer's installation instructions. Piping shall be inspected, tested, and approved before burying, covering, or concealing. Piping shall be installed straight and true to bear evenly on supports. Piping shall be free of traps, shall not be embedded in concrete pavement, and shall drain toward the corresponding storage tank. Any pipe, fittings, or appurtenances found defective after installation shall be replaced. Belowground nonmetallic pipe shall be installed in accordance with pipe manufacturer's instructions. Belowground piping shall be laid with a minimum pitch of 25 mm per 6 m. A tightness test shall be performed on each aboveground storage tank. The tests shall be performed prior to making piping connections. Tests shall be capable of detecting a 0.1 mL/s leak rate from any portion of the tank while accounting for effects of thermal expansion or contraction. Each storage tank shall be pressurized with air to 35 kPa and monitored for a drop in pressure over a 2-hour period during which there shall be no drop in pressure in the tank greater than that allowed for pressure variations due to thermal effects. Following the tank tightness test, each storage tank shall be leak tested in accordance with the manufacturer's written test procedure if the manufacturer's test procedure is different from the tightness tests already performed. Each storage tank shall be filled with the proper fuel at the time of turnover to the Government.

8.4.1 External Fuel Fill Point: For each specific site, the Contractor shall coordinate with the Resident Engineer and provide a fuel unloading point outside of the perimeter wall to facilitate transfer of fuel from the commercial fuel tanker to the bulk fuel storage at the Power Plant. This transfer shall include interconnecting piping, filters and valves between the fuel point and the two bulk fuel storage tanks.

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8.4.2 Submittals

The Contractor shall submit the following for the equipment to be provided under this section of the specification: Manufacturer's standard catalog data, Installation Manual Operation and Maintenance Manuals and test results.

Tests Results:

Six copies of each test containing the information described below in bound letter-size booklets. Individual reports shall be provided for the storage tank tests, the piping tests, the system performance tests, the high level alarm test, and the system leak tests.

Drawings shall be folded blue lines, with the title block visible.

- a. The date the tests were performed.
- b. A list of equipment used, with calibration certifications.
- c. A copy of measurements taken.
- d. The parameters to be verified.
- e. The condition specified for the parameter.
- f. The inspection results, signed, dated, and certified by the installer. The certification shall state that required procedures were accomplished, that the procedures were conducted in compliance with the plans and specifications.
- g. A description of adjustments performed.

8.5 Vehicle Fueling Station

The Contractor shall install a vehicle re-fueling point, as shown in drawings, capable of storing 19,000 liters (5,000 gallons) of diesel and 10,000 liters (2641 gallons) of MOGAS. The re-fueling point shall include a concrete containment curb, fuel dispensers, and a concrete pad. The Contractor shall provide capability for fuel delivery from two locations – one from outside the wall surrounding the compound and one directly into the fuel tanks. The delivery point outside the compound wall shall be lockable and securable from tampering or sabotage.

Below ground storage tanks shall be either double-walled steel tanks in accordance with UL 58, Type II, NFPA 30 and NFPA 30A or double-walled fiberglass reinforced plastic tanks in accordance with UL 1316, NFPA 30 and NFPA 30A. Steel tanks shall be provided with an either a fiberglass reinforced plastic coating system or an STI P3 corrosion protection system. Sumps shall be provided above each tank manway and shall provide a water tight connection directly to the exterior of the tank or to the flanged manway opening. Each sump shall extend upward from the tank to just below the manhole cover and permit access to the interior of the tank without disturbing backfill. Each sump shall be constructed of fiberglass reinforced plastic and chemically compatible with the type of products being handled within the tank. Penetrations in the containment sump sides shall be booted or sealed to ensure that liquid will not escape from the sump in the event that the liquid level within the sump rises above the pipe penetration. Where indicated the entire top of the containment sump shall be capped with a water tight access cover. Vent pipe shall be in accordance with NFPA 30 and UL 142. Vent pipe shall be not less than 32 mm nominal inside diameter. The tank shall be provided with an overfill prevention valve, the valve shall be placed within the interior and be integral part of the fill tube. Valve shall be a float actuated shutoff valve. Tank shall be provided with 2 stick gauges graduated in m and mm. Stick gauge shall be of wood and treated after graduating to prevent swelling or damage from the fuel

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being stored. Each storage tank shall be provided with an automatic analog reading gauge which is directly mounted to a tank's man way cover. Storage tanks shall be handled with extreme care to prevent damage during placement and shall be installed in accordance with the manufacturer's installation instructions.

Belowground piping carrying fuel shall be secondarily contained, unless otherwise indicated. Piping system shall be of double-wall construction with the internal pipe being the product pipe and the exterior pipe being an fiberglass reinforced plastic containment pipe as defined herein. Piping system shall be a factory manufactured piping system designed in accordance with ASME B31.3 and NFPA 30. The containment piping shall allow for complete inspection of the product piping before the containment piping is sealed. Containment piping shall be chemically compatible with the type of fuel to be handled. Containment piping shall be non-corrosive, dielectric, non-biodegradable, and resistant to attack from microbial growth. Containment piping shall be capable of withstanding a minimum 35 kPa 5 psi air pressure. Containment piping shall be evenly separated from the primary pipe using pipe supports which are designed based on pipe size, pipe and fuel weight, and operating conditions. The supports shall be constructed of FRP and shall be designed so that no point loading occurs on the primary or exterior pipe. Supports shall be permanently attached to the product pipe either by tack welding or by an adhesive. The exterior piping and supports shall allow for normal draining as well as the installation of any necessary leak detection equipment or cables. Supports shall be designed and installed to allow for pipe movement of both the product piping and the exterior piping without causing damage to either. Containment piping shall be capable of withstanding H-20 highway loading as defined by AASHTO HB-17.

Use a commercially available dispenser with a self-contained electric motor and pumping unit or a remote pumping type where the pump and motor are located in the storage tank. Provide a meter for each dispenser. Equip fuel dispensers with an in-line filtration system capable of sediment removal to 10 mg/L or less. Dispenser and nozzle shall be securable by means of standard padlock. Card and key lock access is not required. Surround fueling islands with a concrete slab graded at a minimum of 1 percent slope away from island and fuel storage tanks. Shelter for staff is not required. All work must comply with NFPA 30, NFPA 30A, API RP 1615, and UFC 3-460-01, Design: Petroleum Fuel Facilities.

Following the tank tightness test, each storage tank shall be leak tested in accordance with the manufacturer's written test procedure if the manufacturer's test procedure is different from the tightness tests already performed. Each storage tank shall be filled with the proper fuel at the time of turnover to the Government.

8.6 Submittals.

The Contractor shall submit the following for the equipment to be provided under this section of the specification: manufacturer's data including performance characteristics at design conditions; catalog cuts showing dimensions, performance data, electrical requirements, and drawings indicating location and installation details.

9. FIRE PROTECTION

9.1 GENERAL

Facility construction and fire protection systems shall be installed in accordance with the publications listed herein and the publications referenced therein. Where a conflict occurs among various criteria, the more stringent requirement shall take precedence.

9.2 BUILDING CONSTRUCTION

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Building construction shall conform to fire resistance requirements, allowable floor area, building height limitations and building separation distance requirements of the building code.

9.3 FIRE PROTECTION EQUIPMENT

Per user, a sprinkler system is not required.

9.4 FIRE ALARM AND DETECTION

Per user, a fire alarm and detection system is not required.

9.5 WATER SUPPLY FOR FIRE PROTECTION

Water supply for fire protection is not required.

9.6 PORTABLE FIRE EXTINGUISHERS

Portable fire extinguishers (PFEs) shall be provided (and installed) in the Kitchen, DFAC, and in each hallway of each building in accordance with the requirements of NFPA 10. Portable fire extinguishers shall be Multi-purpose Dry Chemical rated 4A:80B:C. Extinguishers shall be wall-mounted on hanger hooks with at least 12 inches clearance from the floor in easily accessible locations. Travel distance to an extinguisher from any location in building shall be no greater than 75 feet.

10. ELECTRICAL

10.1 SCOPE OF WORK

10.1.1 General. Contractor shall construct following systems in compliance with the attached contract drawing and as described below. Systems shall include but not limited to:

- (a) On-site Prime Power Generating Plant
- (b) Exterior Underground Secondary Power Distribution System
- (c) Interior Secondary Distribution System
- (d) Lighting and power branch circuits
- (e) Interior telephone cableway & terminal backboard
- (f) Exterior Site Communications Distribution System
- (h) Closed Circuit Television (CCTV) System.
- (i) Lightning Protection System

All of the systems shall be designed for the ultimate demand loads, plus 20% spare capacity. Above Systems shall be designed for and to provide service to the following facilities as a minimum:

- 1. ANP Headquarters / Administration Building
- 2. Guard Shacks (2)
- 3. Guard House (1)
- 4. Guard Towers (4)
- 5. Power Plant
- 6. DFAC/Barracks BLDG
- 7. Maintenance/Warehouse BLDG

See Site Plan for details.

10.2 DESIGN CRITERIA

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10.2.1 Applicable Standards

- a. National Fire Protection Association, NFPA 70 (National Electric Code, 2005 Edition).
- b. National Fire Protection Association, Life Safety Code, NFPA 101
- c. National Fire Protection Association, Lightning Protection Code, NFPA 780
- d. Illuminating Engineering Society of North America (IES)
- e. Applicable Afghan Standards, as a minimum.

10.2.2 Design shall be in metric units.

10.2.3 Conflicts between criteria and/or local standards shall be brought to the attention of the Contracting Officer for resolution. In such instances, all available information shall be furnished to the Contracting Officer for approval.

10.3 MATERIAL

10.3.1 General: Unless noted otherwise, all material used shall be in compliance with the requirements of the applicable German (DIN) Standards. In the event DIN Standard material is unavailable, contractor may then select comparable British Standard (BS), or Underwriters Laboratories Inc. (UL) listed material. Equipment enclosure types shall be in compliance with the National Electrical Manufacturer's Association (NEMA) or the International Electro-Technical Committee (IEC) standards. Material and equipment installed under this contract shall be for the appropriate application.

10.3.2 Standard Product: All material and equipment shall be a standard product of a manufacturer regularly engaged in the manufacture of the product and shall essentially duplicate items that have been in satisfactory use for at least two (2) years prior to bid opening.

10.3.3 Design Conditions: All equipment shall be rated and designed for 40 Degree Centigrade and elevation of 2000 meters above sea level.

10.3.4 Restrictions: Aluminum conductors shall not be used or specified.

10.4 DESIGN REQUIREMENTS

10.4.1 Power Plant: The Contractor shall site-adapt-Build an On-site Prime Power Generating Plant. The On-site Prime Power Generating Plant for this Compound shall be provided as per the attached drawings, as approved by the COR. Electrical equipment shall include, but not be limited to, diesel engine generators, secondary voltage switchboard, day tanks, relaying equipment and all other auxiliary equipment that is necessary for operating a Prime Power Plant. All major equipment shall have brief operating instructions posted on them in English and Afghan languages. Secondary wiring within the building shall be per paragraph 'Secondary Power Distribution System', as noted below. All cabling within the Power Plant associated with Power Generation (Generator to Switchboard) shall be installed underground in direct buried PVC Schedule 80 (Sch 80) conduits. The Power plant shall be provided with switched Lighting (fixture type B), a GFI protected general purpose receptacle, and a Lightning Protection System.

10.4.1.1 Generators: Two (2) generators, rated at 115KW each, shall be provided inside 'weather-proof' enclosures and shall be for exterior application. Generators shall be skid mounted standard industry size, 1500 RPM; diesel-engine Prime Power rated units. Generating voltage

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shall be 3 phase, 380 volts and 50 Hertz, for Compound wide Secondary Power Distribution, through the generator switchboard as described below. Generator starting shall be electric. Each generator shall be provided with a day tank with a minimum fuel capacity of 8 hours operating at 100% generator rating (name plate kW rating). Sharing of Compound demand load between the generators shall be via generator synchronizing equipment. See drawings for detail requirements.

10.4.1.2 Load Bank: Contractor shall provide a factory manufactured, industry standard permanent load bank connected to the generator secondary switchboard bus to supplement for low demand load on the operating generator. Load bank shall be rated at ~~420~~ 40 kW, with 20 kW load steps. Unit shall be provided with a control panel and necessary circuit protection.

10.4.1.3 Fuel Storage / Distribution System: Refer to Mechanical Section 01015 and design drawings for generator fuel storage / distribution system requirements.

10.4.1.4 Miscellaneous: Contractor shall be responsible for providing all relaying, metering and power plant grounding equipment necessary for safe and efficient operation of the power plant. Relaying shall include, but not be limited to, differential, locking-out, over current, directional and reverse power.

10.4.1.5 Generator Switchboard: Generator Switchboard shall be located with the generators and shall be the central distributing point for the Site Secondary Power Distribution System. Switchboard shall be circuit breaker type, consisting of a main circuit breaker, feeder circuit breakers for service to various facilities on the Compound. Switchboard shall be sized and provided with the required number of circuit breakers to service all facilities in this Contract and future facilities identified on the Site Plan. In addition, the Switchboard shall be provided with two (2) spaces for any future 3 pole circuit breakers. See Power Plant design drawings for details. Switchboard shall be provided inside a 'weather-proof' enclosure and shall be for exterior application.

10.4.1.6 Operating Instructions: Contractor shall provide, mounted in a frame, a complete electrical one-line diagram of the power plant with detail operating instruction. Instructions shall be mounted inside respective generator and switchboard enclosures. Similarly, complete fuel and cooling system schematic diagrams shall also be provided with the operating instructions. Brief operating instructions shall be posted on major components at the power plant. These instructions shall be written in English and Afghanistan languages.

10.4.2 Site Secondary Power Distribution System: This shall include installation of Secondary Power Distribution Systems in underground, direct buried PVC Schedule 40 conduit system. System shall include hand-holes for secondary power cables.

10.4.2.1 Raceways: Exterior raceways (conduits) shall be installed at a slope towards the hand-hole to avoid collection of water in the raceway. Conduit shall be PVC, Schedule 40. Secondary cable shall be installed in conduit as shown on the contract drawings. Duct bank conduits shall be cleaned with a wire mandrel prior to the installation of cables. Minimum of one (1) spare 100mm (4 inch) conduits shall be provided in all main trunks and capped at both ends. Top of the direct buried conduits shall be below the frost line or a minimum of 24 inch (600mm) below grade.

10.4.2.2 Cables: All secondary voltage cables shall be copper, designed for underground installation and shall have appropriate secondary voltage ratings.

10.4.3 Secondary Power Distribution System: Secondary Power shall be 380/220 volts, 3 phase, 4 wire, 50 Hz. Building secondary power distribution system shall include main distribution panel. All panel boards shall be factory fabricated, 'bolt-on' circuit breaker type and each provided with a main circuit breaker. In large buildings, with 225 Amp or greater service, separate lighting and power panels shall be provided. The minimum size circuit breaker shall be rated at 20 amperes.

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Circuit breakers shall be connected to bus bar(s) within the panel boards. Daisy chain (breaker-to-breaker) connection(s) shall not be acceptable. Indoor distribution panels and load centers shall be flush mounted in finished areas. All circuit breakers shall be labeled with an identification number corresponding to the panel schedule. A 3-pole circuit breaker shall be a single unit and not made up of 3 single pole circuit breakers connected with a wire or bridged to make a 3-pole breaker. All wiring shall be copper, minimum # 12 AWG (4mm sq) and installed in surface mounted metal conduits. All panels shall be provided with a minimum of 20% spare capacity for future load growth. Power receptacles (outlets) shall be duplex, 240 volts, 50 HZ, German (DIN) Standard. All splicing and terminations of wires shall be performed in a junction or device boxes. Proper wire nuts/connectors shall be used for splicing wire. No twist-wire connections with electrical tape wrapped around it shall be acceptable. All electrical installation shall be in accordance with the requirements of NFPA 70 (National Electric Code). Main Distribution Panel in large buildings shall be provided with an ammeter, voltmeter and kilowatt-hour meter. Selector switch shall be provided for reading all 3 phases. All service entrance cables and equipment, such as main distribution panels etc., to the facilities shall be sized for the ultimate facility loads, to include any heating and air-conditioning loads, initial and / or future, to be provided by others.

10.4.3.1 Receptacles: General purpose receptacles shall be duplex, grounding (earthed) type, 'surface' wall mounted type, color ivory and installed 500 mm above finished floor (AFF). In office or similar areas receptacles shall be provided as shown on the contract drawings and at intervals not greater than 3M. CEE Type receptacles with plugs (2P+E (240v) or 3P+E (380v) and with appropriate rating, shall be provided for, but not be limited to, kitchen equipment and any other type of large plug-able equipment. Receptacle shall be complete to include box, cover plate and necessary screws/connectors and of the type most commonly used in Afghanistan. Receptacles near sinks or lavatories shall be switch operated and Ground Fault Circuit Interrupter (GFCI), or Residual Current Disconnect (RCD) type, with the trip setting of 30 milliampere or less.

10.4.3.2 Lighting: Light Fixtures: Lighting fixtures shall be a standard manufacturer's product. Fluorescent light fixtures shall be power factor corrected and equipped with standard magnetic ballast(s). All light fixtures shall be capable of receiving standard lamps used and available locally. Light fixtures shall be mounted at 2.7M, minimum, AFF. Fixtures may be pendant or ceiling mounted, depending on the ceiling height and type, or as specified on the contract drawings. Emergency lighting, emergency egress 'exit' lights and exterior building lighting shall be provided, as shown on the drawings. Light fixtures provided inside jail cells shall be vandal resistant and detention center grade fixtures. All fixtures shall be fully factory wired.

10.4.3.2.1 Light Switch: Light switch shall be single pole. Minimum of one light switch shall be provided in every room. Lighting in large rooms/areas shall be controlled from multiple switches where there are multiple entrances into the room. Lighting contactors may be used to operate lighting in open or large bay areas.

10.5 Search Light: Search light shall be prison / security search light and provided on top of each Guard Tower. Search light shall be operable from inside the guard tower cab. See design drawings for details.

10.6 Conductors: All cable and wire conductors shall be copper. Conductor jacket or insulation shall be color coded to satisfy local utility requirements.

10.7 Grounding & Bonding: Grounding and bonding shall comply with the requirements of NFPA 70. Underground connections shall be exothermal welded. All exposed non-current carrying metallic parts of electrical equipment in the electrical system shall be grounded. Insulated grounding conductor (separate from the electrical system neutral conductor) shall be installed in all feeder and branch circuit raceways. Grounding conductor shall be green-colored, unless the local authority requires a different color-coded conductor. Ground rods shall be 20mm in

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diameter, 3 meter long and of copper-clad steel. Ground resistance shall not exceed 25 ohms when measured less than 48 hours after rainfall.

10.8 Enclosures: Enclosures for exterior and interior applications shall be NEMA Type 3R (IEC Classification IP14) and NEMA Type 1 (IEC Classification IP10), respectively, or as indicated in the contract drawings.

10.9 Closed Circuit Television (CCTV): CCTV System shall be complete and basic. System shall include CCTV cameras, cable installed in metal conduit system, digital video recorder and monitor(s). CCTV cameras shall be placed such that to monitor the detainee cell. CCTV monitor shall be located in the Guard House. Final location of the CCTV monitor(s) and cameras shall be coordinated with the Contracting Officer. See design drawings for details.

10.10 Telephone/DATA System: Telephone/DATA System shall include cross-connect box, duplex RJ-45 telephone outlets and empty conduit system. Telephone wiring shall be provided by others. Conduit system shall be metal conduit, surface mounted. Two (2) 50mm conduits with pull-wire shall be provided from the cross connect box to the outside communication hand-hole. Exterior plant telephone cabling shall be provided/installed by others/User. See design drawings for details.

10.11 Lightning Protection System: Lightning Protection System shall be provided in accordance with the requirements of NFPA 780 and as shown on the contract drawings for all facilities to be built under this Contract.

10.12 Identification Nameplates: Major items of electrical equipment, such as the generators, switchboard, panel boards and load centers, shall be provided with a permanently installed engraved identification nameplate.

10.13 Schedules: All panel boards and load centers shall be provided with a panel schedule. Schedule shall be typed written in English and Afghan languages.

10.14 Single Line Diagrams: Complete single line diagram shall be provided in the Power Plant Switchboard Room and in Panelboards in each building. Single line diagram shall show all panels serviced from the generator switchboard and from main distribution panel in each building.

10.15 Acceptance Tests: All systems shall be tested in the presence of the COR for satisfactory operation prior to the turnover and acceptance of the facilities by the Government.

10.16 Well House: Contractor shall design and construct interior and exterior lighting, receptacle, power, and grounding systems for the Well House and functional area. The Well House shall be provided with a minimum of 2 duplex power receptacles (GFI protected), ceiling mounted light fixtures (fixture type B), light switch, switched exterior HPS lighting with photo cell control, one telephone outlet with conduit to communications hand hole with pull string, necessary circuitry for any and all mechanical equipment to be provided for the Well House and Water Tank and Hydro pneumatic System, and main power panel with 20% spare capacity. Lighting level shall be calculated at 30 FC (300 Lux). Design of all systems shall be in compliance with the requirements as described above.

-- End of Section --

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**SECTION 01060
SPECIAL CLAUSES**

**AFGHAN NATIONAL POLICE - BORDER POLICE COMPANY COMPOUNDS
NIMROZ PROVINCE, AFGHANISTAN**

PART 1 GENERAL

1.1 PRECONSTRUCTION CONFERENCE

1.1.1 Schedule of Meeting

At the earliest practicable time, prior to commencement of the work, the Contractor and any Subcontractors whose presence is necessary or requested, shall meet in conference with representatives of the Contracting Officer to discuss and develop a mutual understanding relative to the details of the administration and execution of this contract. This will include but not necessarily be limited to the Contractor's Quality Control (CQC) Program, the Contractors Accident Prevention Program, submittals, correspondence, schedule, access to the work site, security requirements, interface requirements, temporary facilities and services, hazards and risks, working after normal hours or on weekends or holidays, assignment of inspectors, representations, special requirements, phasing, and other aspects of this project that warrant clarification and understanding.

1.1.2 Meeting Minutes

It shall be the responsibility of the Contractors CQC System Manager to prepare detailed minutes of this meeting and submit those minutes to the Contracting Officer for approval within three (3) workdays. Any corrections deemed necessary by the Contracting Officer shall be incorporated and resubmitted within two (2) calendar days after receipt. Upon approval of the minutes by the Contracting Officer, the Contractor shall distribute the minutes to all parties present or concerned.

1.2 AREA USE PLAN

The Contractor shall submit to the Contracting Officer, within ~~ten (10)~~ twenty (20) calendar days after ~~award~~ Notice to Proceed of this task order, an Area Use Plan designating intended use of all areas within the project boundaries. This plan shall include, but not necessarily be limited to the following: the proposed location and dimensions of any area to be fenced and used by the Contractor; construction plant and building installations/the number of trailers and facilities to be used; avenues of ingress/egress to the fenced areas and details of the fence installation; drawings showing temporary electrical installations; temporary water and sewage disposal installations; material storage areas; hazardous storage areas. Any areas that may have to be graveled shall also be identified. The plan shall also include a narrative description of the building structural system, the site utility system and the office or administration facilities. The Contractor shall also indicate if the use of a supplemental or other staging area is desired. The Contractor shall not begin construction of the mobilization facilities prior to approval by the Contracting Officer of the Area Use Plan described herein.

1.3 CONTRACTOR'S MOBILIZATION AREA

The Contractor will be permitted to use an area approved by the Contracting Officer within the contract limits for operation of his construction equipment and plants, shops, warehouses, and offices. The Contractor is responsible for obtaining any required additional mobilization area above that designated. The construction site shall be cleared of construction debris and other materials and the area restored to its final grade.

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1.3.1 Contractor's Temporary Facilities

1.3.1.1 General

All facilities within the Contractor's mobilization area shall be of substantial construction suitable for the local weather conditions. Sanitary facilities shall meet the requirements of Corps of Engineers, Safety and Health Requirements Manual EM 385-1-1.

1.3.1.2 Administrative Field Offices

The Contractor may provide and maintain administrative field office facilities within the mobilization area at the designated site. Government office and warehouse facilities will not be available to the Contractor's personnel.

1.3.1.3 Storage Area

The Contractor shall construct a temporary 1.8 meter (6 foot) high chain link fence around trailers and materials. Fence posts may be driven, in lieu of concrete bases, where soil conditions permit. Trailers, materials, or equipment shall not be placed or stored outside the fenced area unless approved in writing by the Contracting Officer.

1.3.1.4 Plant Communication

Whenever the Contractor has the individual elements of its plant so located that operation by normal voice between these elements is not satisfactory, the Contractor shall install a satisfactory means of communication, such as telephone or other suitable devices. These devices shall be made available for use by Government personnel.

1.3.1.5 Appearance of Mobilization Site Facilities and/or Trailers

Mobilization Site Facilities and/or Trailers utilized by the Contractor for administrative or material storage purposes shall present a clean and neat exterior appearance and shall be in a state of good repair. Trailers or other transportable structures which, in the opinion of the Contracting Officer, require exterior painting or maintenance will not be allowed on the construction site until such work or maintenance has been performed to the satisfaction of the Contracting Officer.

1.3.1.6 Maintenance of Storage Area

Fencing shall be kept in a state of good repair and proper alignment. Should the Contractor elect to traverse unpaved areas which are not established roadways with construction equipment or other vehicles, such areas shall be covered with a layer of gravel as necessary to prevent rutting and the tracking of soil onto paved or established roadways; gravel gradation shall be at the Contractor's discretion.

1.3.1.7 Security Provisions

Adequate outside security lighting shall be provided at the Contractor's temporary facilities. The Contractor shall be responsible for the security of its own facilities and equipment.

1.3.1.8 Sanitation

a. Sanitary Facilities: The Contractor shall provide portable sanitation facilities for the Contractor's use. The Contractor shall be responsible for maintaining such facilities at no expense to the Government.

b. Trash Disposal: The Contractor shall be responsible for collection and disposal of trash from the work areas and from the mobilization area. General construction debris and demolition debris shall be

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collected and transported by the Contractor to a location designated by the Government. Construction debris, waste materials, packaging material and the like shall be removed from the work site daily. Loose debris capable of being windblown, shall be immediately placed in sealed or covered containers to prevent it from being blown onto the base. Any dirt or soil that is tracked onto paved or surfaced roadways shall be cleaned daily. Materials resulting from demolition activities that are salvageable shall be stored within the fenced area described above. Stored material not indoors, whether new or salvaged, shall be neatly stacked when stored.

1.3.1.9 Telephone

The Contractor shall make arrangements to install and pay all costs for telephone facilities desired.

1.3.1.10 Restoration of Storage Area

Upon completion of the project and after removal of mobilization facilities, trailers, materials, and equipment from within the fenced area, the fence shall be removed and will become the property of the Contractor. Areas used by the Contractor for the storage of equipment or material, or other use, shall be restored to the original or better condition. Gravel used to traverse unpaved areas shall be removed and all such areas restored to their original conditions.

1.3.2 Protection and Maintenance of Traffic

During construction the Contractor shall provide access and temporary relocated roads as necessary to maintain traffic. The Contractor shall maintain and protect traffic on all affected roads during the construction period except as otherwise specifically directed by the Contracting Officer. Measures for the protection and diversion of traffic, including the provision of watchmen and flagmen, erection of barricades, placing of lights around and in front of equipment and the work, and the erection and maintenance of adequate warning, danger, and direction signs, shall be as required by the Host Nation and base authorities having jurisdiction. The traveling public shall be protected from damage to person and property. The Contractor's traffic on roads selected for hauling material to and from the site shall interfere as little as possible with base traffic. The Contractor shall investigate the adequacy of existing roads and the allowable load limit on these roads. The Contractor shall be responsible for the repair of any damage to roads caused by construction operations.

1.3.2.1 Not used.

1.3.2.2 Not used.

1.3.3 Temporary Project Safety Fencing and Barricades

The Contractor shall impose all measures necessary to limit public access to hazardous areas and to ensure the restriction of workers to the immediate area of the construction and mobilization site. The Contracting Officer may require in writing that the Contractor remove from the work any employee found to be in violation of this requirement.

1.3.3.1 Barricades

Barricades shall be required whenever safe public access to paved areas such as roads, parking areas or sidewalks is prevented by construction activities or as otherwise necessary to ensure the safety of both pedestrian and vehicular traffic. Barricades shall be securely placed, clearly visible with adequate illumination to provide sufficient visual warning of the hazard during both day and night. Travel to and from the project site shall be restricted to a route approved by the Contracting Officer.

1.3.4 Host Nation Authorizations, Permits and Licenses

It shall be the Contractor's responsibility to obtain such local authorizations, permits and licenses
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necessary to establish his quarry operations, batching operations and haul routes (See Special Clause entitled: COMPLIANCE WITH HOST COUNTRY RULES AND CUSTOMS).

1.4 RESPONSIBILITY FOR PHYSICAL SECURITY

Prior to mobilization, the Contractor shall submit his proposed means of providing project security to prevent unauthorized access to equipment, facilities, materials and documents, and to safeguard them against sabotage, damage, and theft. The Contractor shall be responsible for physical security of all materials, supplies, and equipment of every description, including property which may be Government-furnished or owned, for all areas occupied jointly by the Contractor and the Government, as well as for all work performed.

1.5 DUST CONTROL

The Contractor shall be required to control objectionable dust in the work areas, access roadways, and haul roads by means of controlled vehicle speeds or dust palliatives. Vehicles transporting sand, cement, gravel or other materials creating a dust problem shall be covered, as directed by the Contracting Officer, or in accordance with local Laws, codes, and regulations.

1.6 DIGGING PERMITS

1.6.1 Requirements for Digging Permits

1.6.2 Not used.

Requests for Digging Permits shall be submitted to Contracting Officer a minimum of seven (7) days prior to the start of the work activity covered by the permit. The request for a Digging Permit shall include a narrative description of the work to be performed and a detailed map of the area of the excavation clearly marking the location of all known utilities or other obstructions. If the work activity covered by the Digging Permit request also requires a utility outage, a separate request for the outage shall be submitted in accordance with the paragraph entitled CONNECTIONS TO EXISTING UTILITIES.

1.6.3 Preparation of Requests for Digging Permits

Prior to submitting a request for a Digging Permit, the Contractor shall carefully review the area to be excavated to determine the location of existing utilities and other obstructions. The Contractor will review available drawings and will conduct a visual inspection of the site. The Contractor will utilize underground utility detecting devices such as metal and cable detectors to determine the location of existing utilities. All utility lines found shall be clearly flagged or marked and the location of the utility shall be shown on the drawing to be submitted with the request for Digging Permit.

1.6.4 Existing Underground Utilities

The Contractor shall exercise utmost care in researching locations of existing utilities and reducing damage to existing utilities. Any utilities damaged by the Contractor shall be promptly repaired by the Contractor. The Contracting Officer will review and approve any proposed repairs. Any damage to existing utilities will be immediately reported to the Contracting Officer and the Base Commander.

1.7 CONNECTIONS TO EXISTING UTILITIES

1.7.1 General

Any outage involving disruption of electrical service beyond the site area shall be requested in writing at least ten (10) days in advance of the date requested for the commencement of the outage. The Contractor shall provide a request, detailing the type of outage needed (water, sewer, electrical, steam, etc.), the time needed to perform the work, the reason for the outage, and the known affected facilities. The Contracting Officer shall be contacted prior to the outage to confirm the time and date. If the

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Contractor fails to initiate work at the approved time, the Contracting Officer may cancel the approved outage and may direct the Contractor to resubmit a new request. No part of the time lost due to the Contractor's failure to properly schedule an outage shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

1.7.1.1 Not used.

1.7.1.2 Exterior Night Lighting

Exterior night lighting shall be provided in conformance with EM-385-1-1 entitled Safety and Health Requirements Manual.

1.7.2 Existing Underground Utilities

The Contractor is provided notice that existing utilities may be present in the construction area. The Contractor shall exercise the utmost care in researching locations of existing utility lines by implementing control measures to eliminate, or reduce to a level acceptable to the Contracting Officer, the chance of damaging or destroying existing utilities.

1.7.2.1 Use of Underground Utility Detecting Device

Prior to any excavation, a metal and/or cable-detecting device shall be used along the route of the excavation. All underground utilities discovered by this method will be flagged a minimum distance of one-half (1/2) meter on each side of the location.

1.7.2.2 Hand Excavation

Hand excavation methods and special supervisory care shall be used between any flagged markers, in areas of known or suspected hazards, and in areas known or suspected to have multiple and/or concentrated utility lines or connections.

1.7.3 Repair of Damaged Utilities

The Contractor shall be responsible to repair any utilities damaged by him. The method of repair and schedule for performance of the repair shall be coordinated with, and subject to the approval of, the Contracting Officer. The repair work and any temporary work required to keep the system operational while repairs are being completed, shall be performed at no cost to the Government.

1.8 NOT USED

1.9 NOT USED

1.10 ELECTRICITY (CONTRACTOR PROVIDED)

Electrical service is not available for use under this contract; therefore all electric current required by the Contractor shall be the responsibility of the Contractor, furnished at his own expense. The Contractor shall provide diesel generators to meet his demand requirements. Electricity required for final testing systems shall be furnished by the Contractor. The means of doing so, such as by temporary distribution systems, shall be the responsibility of the Contractor. All temporary connections for electricity shall be subject to the approval of the Contracting Officer and shall comply with Corps of Engineers manual EM 385-1-1 entitled Safety and Health Requirements Manual. All temporary lines shall be furnished, installed, connected and maintained by the Contractor in a workmanlike manner satisfactory to the Contracting Officer. Before final acceptance of systems, or facilities, all temporary connections installed by the Contractor shall be removed at his expense in a manner satisfactory to the Contracting Officer.

1.11 WORK OUTSIDE REGULAR HOURS

If the Contractor desires to carry on work outside regular base duty hours, or on holidays (including the following U.S. holidays: New Year's Day, Martin Luther King Jr's Birthday, George Washington's Birthday, Memorial Day, Independence Day, Labor Day, Columbus Day, Veteran's Day, Thanksgiving and Christmas), he shall submit an application to the Contracting Officer. The Contractor shall allow ample time to enable satisfactory arrangements to be made by the Government for inspecting the work in progress. At night, exterior lighting shall be provided in conformance with EM-385-1-1 entitled "Safety and Health Requirements Manual".

1.12 SCHEDULING OF WORK IN EXISTING FACILITIES

As soon as practicable, but in any event not later than seven (7) calendar days after award of this task order, the Contractor shall meet in conference with the Contracting Officer, or his duly authorized representatives, to discuss and develop mutual understanding relative to the scheduling of work in and access to the existing facilities where work has to be performed under this contract, so that the Contractor's proposed construction schedule is coordinated with the operating and security requirements of the installation.

1.13 NOT USED

1.14 NOT USED

1.15 CERTIFICATES OF COMPLIANCE

Any certificates required for demonstrating proof of compliance of materials with specification requirements shall be executed in accordance with Section 01335 SUBMITTAL PROCEDURES FOR DESIGN/BUILD. Each certificate shall be signed by an official authorized to certify in behalf of the manufacturing company involved and shall contain the name and address of the Contractor, the project name and location, description and the quantity of the items involved, and date or dates of shipment or delivery to which the certificates apply. Copies of laboratory test reports submitted with certificates shall contain the name and address of the testing laboratory and the date or dates of the tests to which the report applies. Certification shall not be construed as relieving the Contractor from furnishing satisfactory material.

1.16 ACCIDENT PREVENTION

The Contractor shall comply with all applicable Host Country laws and with such additional measures as the Contracting Officer may find necessary in accordance with CONTRACT CLAUSE 52.236-13 entitled ACCIDENT PREVENTION (NOV1991)-ALTERNATE 1 (APR 1984). Applicable provisions of the Corps of Engineers manual entitled Safety and Health Requirements Manual EM 385-1-1 will be applied to all work under this contract. The referenced manual may be obtained from the Contracting Officer at the jobsite or from the Afghanistan Engineer District at Kabul, Afghanistan.

1.16.1 Accident Prevention Program

Within fifteen (15) days after award of this task order, and at least ten (10) days prior to the accident prevention pre-work conference, four (4) copies of the Accident Prevention Plan required by the CONTRACT CLAUSE 52.236-13 entitled ACCIDENT PREVENTION (NOV 1991)- ALTERNATE I shall be submitted for review by the Contracting Officer. The Contractor shall not commence physical work at the site until the Accident Prevention Plan (APP) has been reviewed and accepted by the Contracting Officer. The APP shall meet the requirements listed in Appendix "A" of EM385-1-1. The program shall include the following: TAC Form 61 " Accident Prevention Program Hazard Analysis (Activity Hazard Analysis)" fully completed and signed by an executive officer of the company in block No. 13. The Activity Hazard Analysis is a method in which those hazards likely to cause a serious injury or fatality are analyzed for each phase of operations. Corrective action is planned in advance, which will eliminate the hazards. An ANP Border Police Company Compounds
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analysis is required for each new phase of work. On large or complex jobs the first phase may be presented in detail with the submittal of the Accident Prevention Plan rather than presenting the complete analysis. If the plan is to be presented in phases, a proposed outline for future phases must be submitted as a part of the initial Accident Prevention Plan submittal. Accident Prevention Plans will be reviewed for timeliness and adequacy at least monthly with a signature sheet signed and dated documenting that these reviews took place. Copy of company policy statement of Accident Prevention and any other guidance as required by EM 385-1-1, Appendix A.

1.16.2 Ground Fault Circuit Interrupter (GFCI) Requirement – Overseas Construction

The Corps of Engineers Health and Safety Manual, EM 385-1-1, section 11.C.05.a. states: "The GFCI device shall be calibrated to trip within the threshold values of 5 ma +/- 1 ma as specified in Underwriters Laboratory (UL) Standard 943." A variance from USACE has been granted allowing 10 ma, in lieu of 5 ma, for overseas activities that use 220 Volts (V)/50 hertz (Hz) electrical power.

1.16.3 Temporary Power - Electrical Distribution Boxes

EM 385-1-1 section 11.A.01.a. states, "All electrical wiring and equipment shall be a type listed by a nationally recognized testing laboratory for the specific application for which it is to be used." This includes temporary electrical distribution boxes. Locally manufactured electrical boxes will not be allowed. Only manufactured electrical distribution boxes that meet the European CE requirements, with 10 ma CE type GFCIs installed shall be allowed.

Contractors shall:

- a. Make no modifications that might void any CE or manufacturer certification.
- b. Test the installed systems to demonstrate that they operate properly and provide the 10 ma earth leakage protection.
- c. Ensure GFCIs will have an integral push-to-test function. The testing shall be performed on a regular basis.
- d. Check that proper grounding is checked regularly and flexible cords, connectors, and sockets inspected before each use.

1.17 HAZARDOUS MATERIALS

Should the Contractor encounter asbestos or other hazardous materials, during the construction period of this contract, he shall immediately stop all work activities in the area where the hazardous material is discovered. The Contractor shall then notify the Contracting Officer; identify the area of danger; and not proceed with work in that area until given approval from the Contracting Officer to continue work activities. Hazardous material is considered to be asbestos, explosive devices, toxic waste, or material hazardous to health and safety. The Contractor shall secure the area from daily traffic until it is safe to resume normal activities.

1.18 SPARE PARTS

1.18.1 General

The requirements of this clause are in addition to any requirements for the provision of specific spare parts to be provided by the Contractor included in Technical Provisions. The Contractor shall furnish spare parts as directed by the Contracting Officer under the provisions of this clause for all equipment for which O&M data is to be provided under Clause OPERATION AND MAINTENANCE (O&M) DATA of this contract. The term "spare parts" as used herein shall include spare parts, special tools and test equipment.

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1.18.2 Selection of Spare Parts to be Furnished

The Contractor shall provide master parts lists, recommended spare parts lists and lists of special tools and test equipment as a part of the equipment O&M data required by Clause OPERATION AND MAINTENANCE (O&M) DATA. The master parts list shall include the supplier's price for each part. After review of the lists, the Contracting Officer will select spare parts and furnish written direction to the Contractor indicating quantities and types of spare parts to be furnished by the Contractor. Written directions for spare parts orders may be provided on an incremental basis as reviews of O&M data submitted by the Contractor are completed but will not necessarily be issued in the sequence in which the Contractor submitted the equipment O&M data.

1.18.3 Procurement and Delivery of Spare Parts

The Contractor shall procure and be responsible for delivery, receipt, handling, placing in storage, inventory, and turnover to the Contracting Officer all spare parts selected by the Contracting Officer. In addition to the recommended spare parts list required in paragraph SELECTION OF SPARE PARTS TO BE FURNISHED above, the Contractor is responsible to have one (1) year supply of manufacturer's recommended spare parts on site ready to turn over to the Contracting Officer at the time of acceptance of the facility.

1.18.3.1 Shipment and Delivery

The Contractor shall be responsible for the shipment and delivery of spare parts to the location on or near the site in Afghanistan as selected by the Contracting Officer. The Contractor shall provide all manpower and equipment required to receive and place into designated storage areas all spare parts purchased under this clause. The Contractor shall give the Contracting Officer thirty (30) calendar days notice of arrival at the site of the first shipment.

1.18.3.2 Turnover of Spare Parts

The Contractor shall notify the Contracting Officer seventy-two (72) hours prior to delivery of spare parts to the designated storage area. The Contractor and the Contracting Officer will perform a joint inventory of the spare parts and the spare parts will be turned over to the Contracting Officer. Spare parts purchased under this clause shall not be used by the Contractor.

1.18.3.3 Parts and Package Identification

Prior to shipment from point of purchase, each spare part shall be tagged or otherwise marked or labeled. Such labeling may be placed or affixed to the container, box or packaging in which spare parts are located when it is not feasible to place or affix such labeling directly on each spare part. Tags or labels shall include, but not necessarily be limited to; part number, description, parent equipment name and number location, project and/or other data as directed by the Contracting Officer.

1.18.3.4 Preservation and Packaging Instruction

a. Items ordered under this contract shall be preserved and packed for a minimum of three (3) years shelf life storage. All items shall be individually packaged except when the manufacturer specifies that the items are to be used in sets. Appropriate identification labels must be affixed to the items protective box or package. After the spare parts are packaged, the manufacturer shall weigh the spare parts and packaging and place the weight and size of the packaged container on the label with other information as outlined herein. Each item, not normally identified with manufacturer's name and part number, shall have an appropriate label affixed to it with manufacturer's name and part number.

b. Machined spare parts shall be lubricated or coated in order to withstand extensive periods of storage in a highly corrosive atmosphere.

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c. Large items (greater than 50 lbs., or larger than one cubic foot) shall be packaged in waterproof wooden boxes and properly braced. Cushioning shall be used to prevent damage to the item and to the packaging material.

d. Solid state components, such as diodes, transistors, integrated circuits or equipment consisting of such parts that can be damaged as a result of static electricity and other stray electro-magnetic fields shall be packaged in heat-sealed, aluminum foil, laminated, flexible packages.

e. All other spare parts shall be packaged in heat sealed plastic bags or wrap. Delicate and more fragile items such as test equipment shall be cushioned or wrapped with transparent bubble wrap material prior to being inserted into the plastic package.

1.18.4 Warranty

All spare parts provided by the Contractor under this clause are subject to the general warranty clauses of this contract.

1.18.5 Payments for Spare Parts

Payments for spare parts ordered under the paragraph entitled "Selection of Spare Parts To Be Furnished" will be made under the work item of the Work Breakdown Sheet entitled "Spare Parts". Payments for spare parts specifically required elsewhere in this contract shall be considered as part of those equipment costs and shall be included in other payment items as appropriate. Payments for spare parts ordered under this clause shall be based on the invoice price (FOB supplier) plus certified invoice price of surface shipment to the site in Afghanistan. The invoice price (FOB supplier) shall include the separately listed cost for preservation and packaging by the manufacturer as specified herein. The Contractor shall provide invoices and any additional backup, which may be required to demonstrate that the invoices presented represent the cost of spare parts, preservation and packaging, and cost of surface shipment to the site. Payment for handling, delivery, inventory, turnover, customs, overhead or profit shall not be paid or allowed under this Contract Provision, and shall be included in the cost for installation of this equipment under the other appropriate payment items of this contract. Price increases over prices furnished under paragraph SELECTION OF SPARE PARTS TO BE FURNISHED shall be fully substantiated. Payment for spare parts will be made after the spare parts have been accepted at the site by the Contracting Officer. If the total payments under the work item entitled "Spare Parts" does not reduce the balance of this work item to zero, the remaining balance will be deducted from the final contract amount. If orders exceed the work item entitled "Spare Parts", a modification for equitable adjustment will be issued in accordance with Contract Clause 52.243-4 entitled CHANGES. Payments for spare parts ordered under this clause shall constitute full payment for all cost of the spare parts and associated cost of preservation and packaging, and cost of surface shipment to the site. Other ancillary costs shall be included by the Contractor under the other appropriate work items of this contract and no additional cost except as provided herein will be allowed.

1.19 OPERATION AND MAINTENANCE (O&M) DATA

1.19.1 General

The requirements contained herein are in addition to all shop drawings submission requirements stated in other sections of the specifications. The Contractor shall include the provisions for all items required under this clause in all purchase orders and sub-contract agreements. Submittals required hereinafter will not relieve the Contractor of any responsibilities under the Warranty of Construction Provisions of this contract or under the various Guarantee Clauses of the Technical Provisions.

1.19.2 Submittals

The Contractor shall submit all items requiring submission of O&M data under this and other sections of ANP Border Police Company Compounds
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these specifications in accordance with Section 01335 SUBMITTAL PROCEDURES FOR DESIGN/BUILD of the specifications.

1.19.3 Operation and Maintenance (O&M) Data

The Contractor shall furnish operation and maintenance manuals for all facilities constructed under this contract. **The Contractor must provide O&M manuals in English and in Dari.** The manuals shall be loose leaf, indexed and shall consist of manufacturer's brochures, manufacturer's operation and maintenance manuals, service and repair manuals, catalogs, service bulletins, instruction charts, diagrams, other information as necessary to support the operation and maintenance of the end items of equipment, assemblies and systems. Each type of facility (housing, barracks, mosque, etc.) shall be covered by a separate manual (or manuals) consisting of all data pertaining to the equipment and/or systems within that facility. Identical equipment within a single major system shall require only one submittal of data. The Contractor shall furnish all O&M manuals to the Contracting Officer not less than thirty (30) calendar days prior to contract completion. Required number of submittals (number of sets) shall be as specified in Section 01335 SUBMITTAL PROCEDURES FOR DESIGN/BUILD.

1.19.4 Recommend Spare Parts List

The Contractor shall furnish a recommended spare parts list containing equipment manufacturers' recommendations for five (5) years; two (2) years and one (1) year spare parts stock levels in Afghanistan. Current unit price and effective date, lead time, shelf life for each individual part, and total cost of all recommended parts shall be furnished.

1.19.5 Supplemental Submittals of Data

After initial submittal of O&M manuals and until final acceptance of all equipment, the Contractor shall prepare and deliver to the Contracting Officer supplemental technical data as previously described for all changes, modifications, revisions and substitutions to equipment and components. For equipment or systems introduced into the contract under change order, or modified by change order, supplemental data shall be furnished within forty-five (45) calendar days after issuance of the change order. The supplemental data furnished shall be properly prepared and identified for insertion into the O&M manuals.

1.19.6 Framed Instructions for Systems

Approved wiring and control diagrams showing the complete layout of the entire system, including equipment, piping, valves and control sequence, framed under glass or in approved laminated plastic, shall be posted, where applicable, in all mechanical equipment rooms. In addition, detailed operating instructions explaining safe starting and stopping procedures for all systems shall be prepared in typed form along with the inspections required to insure normal safe operations. The instructions shall be framed as specified above for the wiring and control diagrams and posted beside the diagram. Proposed diagrams, instructions, and other sheets shall be submitted for approval prior to posting. Operating instructions shall be posted before acceptance testing of the systems and verified during acceptance testing.

1.19.7 Additional Submittals/Resubmittals

The Contracting Officer reserves the right to determine whether the above specified information, as furnished by the Contractor, is adequate and complete and to require such additional submittals by the Contractor as necessary to insure that adequate information has been furnished to provide the satisfactory operation and maintenance of the various items of equipment and to fulfill the intent of the specifications. Additional submittals or resubmittals supplementing incorrect or incomplete data shall be made within thirty (30) calendar days after receiving notice by the Contracting Officer. All costs arising from these resubmissions shall be borne by the Contractor.

1.20 Not Used

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1.21 CONTRACTOR FURNISHED EQUIPMENT LISTS

The Contractor shall furnish a list of all items, other than integral construction type items, furnished under the contract. Items such as furniture, drapes, rugs, vehicles, office machines, appliances, etc., shall fall under this category. The Contractor's list shall describe the item; give the unit price and total quantities of each. Model and serial numbers for equipment shall be provided when applicable. The Contractor shall keep an up-to-date register of all covered items and make this information available to the Contracting Officer at all times. Prior to acceptance, the Contractor shall submit the complete register to the Contracting Officer.

1.22 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER

1.22.1 General

This provision specifies the procedure for determination of time extensions for unusually severe weather in accordance with the Contract Clause 52.249-10 entitled DEFAULT (FIXED-PRICE CONSTRUCTION) APR 1984. The listing below defines the anticipated monthly unusually severe weather for the contract period and is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the geographic location of the project. The schedule of anticipated unusually severe weather will constitute the baseline for determining monthly weather time evaluations. Upon award of this task order and continuing throughout the contract each month, actual unusually severe weather days will be recorded on a calendar day basis (including weekends and holidays) and compared to the monthly anticipated unusually severe weather in the schedule below. The term "actual unusually severe weather days" shall include days actually impacted by unusually severe weather. The Contractor's schedule must reflect the anticipated unusually severe weather days on all weather dependent activities.

MONTHLY ANTICIPATED UNUSUALLY SEVERE WEATHER CALENDAR DAYS

January	4 Days
February	2 Days
March	2 Days
April thru December	0 Days

1.22.2 Time Extensions

The number of actual unusually severe weather days shall be calculated chronologically from the first to the last day in each month. Unusually severe weather days must prevent work for fifty percent (50%) or more of the Contractor's workday and delay work critical to the timely completion of the project. If the number of actual unusually severe weather days exceeds the number of days anticipated in the paragraph above, the Contracting Officer will determine whether the Contractor is entitled to a time extension. The Contracting Officer will convert any qualifying delays to calendar days and issue a modification in accordance with the Contract Clause 52.249-10 entitled DEFAULT (FIXED-PRICE CONSTRUCTION) APR 1984.

1.23 STANDARDIZATION

Where two or more items of the same type or class of product, system or equipment furnished in this project are required, the units shall be products of the same manufacturer and shall be interchangeable when of the same size, capacity, performance characteristics, and rating. The only exception to this requirement is where the items are interchangeable due to conformance with industry standards (valves, fittings, etc.); they need not be by the same manufacturer. This requirement applies to all manufactured items in the project that normally require repair or replacement during the life of the equipment.

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1.24 COMPLIANCE WITH HOST COUNTRY RULES AND CUSTOMS

The laws of Host Country may prohibit access to certain areas of the country that are under military control. The Contractor shall furnish the Contracting Officer the names of personnel, type, and amounts of equipment, dates and length of time required at the site, and the purpose of entering the host country. It is understood that areas to which rights of entry are provided by the Host Government are to be used only for work carried out under the contract and no destruction or damages shall be caused, except through normal usage, without concurrence of the Host Government.

1.24.1 Contractor's Responsibilities

The following items are the sole responsibility of the Contractor to investigate, estimate as to cost, and assume the risk, as normally encountered by Contractors. The Contractor shall be responsible for determining the effect of the following on his own cost of performance of the contract and for including sufficient amount in the contract price:

- a. Official language and type of accounts required to satisfy the officials of the Local Government.
 - b. Entry and exit visas, residence permits, and residence laws applicable to aliens. This includes any special requirements of the Host Government, including those required by local Labor Offices, which the Contractor may have to fulfill before an application for a regular block of visas will be accepted.
 - c. Passports, health and immunization certificates, and quarantine clearance.
 - d. Compliance with local labor and insurance laws, including payment of employer's share of contribution, collecting balance from employee and paying into insurance funds.
 - e. Strikes, demonstrations and work stoppage.
 - f. Collection through withholding and payment to local Government, of any Host Country income tax on employees subject to tax.
 - g. Arranging to perform work in the Host Country, to import personnel, to employ non-indigenous labor, to receive payments and to remove such funds from the country.
 - h. Operating under local laws, practices, customs and controls, and with local unions, in connection with hiring and firing, mandatory wage scales, vacation pay, severance pay, overtime, holiday pay, 7th day of rest, legal notice or pay in lieu thereof for dismissal of employees, slowdown and curtailed schedules during religious holidays and ratio of local labor employed in comparison to others.
 - i. Possibility of claims in local bureaus, litigation in local courts, or attachment of local bank accounts.
 - j. Compliance with workmen's compensation laws and contributions into funds. Provisions of necessary medical service for Contractor employees.
 - k. Special license required by the local Government for setting up and operating any manufacturing plant in the Host Country, e.g. concrete batching, precast concrete, concrete blocks, etc.
 - l. Sales within the host country of Contractor-owned materials, and equipment.
 - m. Special licenses for physicians, mechanics, tradesmen, drivers, etc.
 - n. Identification and/or registration with local police of imported personnel.
 - o. Stamp tax on documents, payments and payrolls.
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p. Base passes for permanent staff, day laborers, motor vehicles, etc.

q. Compliance with all customs and import rules, regulations and restrictions, including, but not limited to, local purchase requirements.

1.25 Not used.

1.25.1 Employee Identification

The Contractor shall be responsible for furnishing to each employee and for requiring each employee engaged on the work, to display identification as approved and directed by the Contracting Officer. Prescribed identification shall immediately be delivered to the Contracting Officer for cancellation upon release of any employee. When required, the Contractor shall obtain and provide fingerprints of persons employed on the project. Contractor and subcontractor personnel shall wear identifying markings on hard hats clearly identifying the company for whom the employee works.

1.25.2 Identification of Contractor Vehicles

The Contractor shall be responsible for requiring each vehicle engaged in the work to display permanent vehicular identification as approved and directed by the Contracting Officer. A valid license plate shall be displayed at all times. Contractor vehicles operated on Government property shall be maintained in a good state of repair, shall be insured, and shall be registered in accordance with Afghan Law.

1.25.3 Security Plan

The Contractor shall submit to the Contracting Officer, within ten (10) calendar days after award of this task order, his proposed personnel and vehicular access plan. This plan shall cover all elements for issuance of the access passes, safeguarding of un-issued passes, construction security operations, lost passes, temporary vehicle passes, and collection of passes for employee's and vehicles on 1)- temporary absence; 2)- termination or release; and 3)- termination or completion of contract. The plan shall address in detail the contractors proposed procedures, and organization necessary to produce and maintain effective security within the contract limits twenty-four (24) hours a day seven (7) days a week.

1.26 RADIO TRANSMITTER RESTRICTIONS

To preclude accidental actuation of sensitive electronic equipment, the Contractor shall not use radio-transmitting equipment without prior approval of the Contracting Officer.

1.27 Not used.

1.28 PUBLIC RELEASE OF INFORMATION

1.28.1 Prohibition

There shall be no public release of information or photographs concerning any aspect of the materials or services relating to this bid, contract, purchase order, or other documents resulting there from without the prior written approval of the Contracting Officer.

1.28.2 Subcontract and Purchase Orders

The Contractor agrees to insert the substance of this clause in all purchase orders and subcontract agreements issued under this contract.

-- End of Section --

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SECTION 01335

SUBMITTAL PROCEDURES FOR DESIGN-BUILD PROJECTS

PART 1 GENERAL

1.1 REFERENCE

The publication listed below forms a part of this specification to the extent referenced. The publication is referenced to in the text by basic designation only.

CONSTRUCTION SPECIFICATIONS INSTITUTE

Manual of Practice
Construction Specifications Institute
http://www.csinet.org/s_csi/index.asp
601 Madison Street
Alexandria, Virginia
22314-1791

NATIONAL INSTITUTE OF BUILDING SCIENCES (NIBS)

Unified Master Reference List (UMRL)
National Institute of Building Sciences
1090 Vermont Avenue, NW, Suite 700
Washington, DC 20005-4905
Email: nibs@nibs.org
FAX: (202) 289-1092
Tele: (202) 289-7800

AFGHANISTAN ENGINEER DISTRICT

AFGHANISTAN ENGINEER DISTRICT
<http://www.aed.usace.army.mil>
U.S. Army Corps of Engineers
Attn.: Qalaa House
APO AE 09356

TRANSATLANTIC PROGRAMS CENTER

Design Instructions Manual

U.S. Army Corps of Engineers
<http://www.tac.usace.army.mil/extranet/>
Transatlantic Programs Center
201 Prince Frederick Drive
Winchester, Virginia 22602

1.2 SUBMITTAL CLASSIFICATION

Submittals are classified as follows:

1.2.1 DESIGN SUBMITTALS

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Refer to the *Submittal Distribution and Quantities Table* at Attachment A for minimum submission requirements.

The Government reserves the right to issue an NTP (notice to proceed) for any phase for fast-track projects.

1.2.2 CONSTRUCTION SUBMITTALS

1.2.2.1 Contractor Furnished Government Approved Construction Submittals

Government approved construction submittals are primarily related to plans (Contractor Quality Control, Accident Prevention, Resident Management System, Area Use, etc.) schedules (Project Schedule/Network Analysis), and certificates of compliance. They may also include proposed variations to approved design documents in accordance with the paragraph entitled "VARIATIONS".

1.2.2.2 For Information Only Construction Submittals (FIO)

All submittals not requiring Designer of Record or Government approval will be for information only.

1.3 SUBMITTAL CERTIFICATION

The CQC organization shall be responsible for certifying that all submittals and deliverables have been reviewed in detail for completeness, are correct, and are in strict conformance with the contract drawings, specifications, and reference documents.

1.3.1 Effective Quality Control System

The Design-Build Contractor is responsible for quality control and shall establish and maintain an effective quality control system in compliance with Contract Clause 52.236-21 SPECIFICATIONS AND DRAWINGS FOR CONSTRUCTION - ALTERNATE I and specification section 01451 CONTRACTOR QUALITY CONTROL.

1.3.1.1 Organizational Responsibility

The quality control system shall cover all design, construction, subcontractor, manufacturer, vendor, and supplier operations at any tier, both onsite and offsite.

1.3.1.2 CQC System Manager Review and Approval

Prior to submittal, all items shall be checked and approved by the Design-Build Contractor's Quality Control (CQC) System Manager. If found to be in strict conformance with the contract requirement, each item shall be stamped, signed, and dated by the CQC System Manager. Copies of the CQC organizations review comments indicating action taken shall be included within each submittal.

1.3.1.3 Determination of Compliance

Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements by the Contracting Officer.

1.3.2 Responsibility for Errors or Omissions

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It is the sole responsibility of the Design-Build Contractor to ensure that submittals do or do not comply with the contract documents. Government review, clearance for construction, or approval by the Contracting Officer shall not relieve the Design-Build Contractor from responsibility for any errors or omissions in such drawings, nor from responsibility for complying with the requirements of this contract.

1.3.2.1 Government Review

Government review, clearance for construction, or approval of post design construction submittals shall not be construed as a complete check, but will indicate only that the general method of construction, materials, detailing and other information are satisfactory.

1.3.3 Substitutions

After design submittals have been reviewed and cleared for construction by the Contracting Officer, no resubmittal for the purpose of substituting materials or equipment will be considered unless justified as indicated in the paragraph entitled VARIATIONS.

1.3.4 Additional Submittals

In conjunction with Contract Clause [52.236-5 MATERIAL AND WORKMANSHIP], the Contracting Officer may request submittals in addition to those specified when deemed necessary to adequately describe the work.

1.3.5 Untimely and Unacceptable Submittals

If the Design-Build Contractor fails to submit submittals in a timely fashion, or repetitively submits submittals that are not in strict conformance with the contract documents, no part of the time lost due to such actions shall be made the subject of claim for extension of time or for excess costs or damages by the Design-Build Contractor.

1.3.6 Stamps

Stamps shall be used by the Design-Build Contractor on all design and post design construction submittals to certify that the submittal meets contract requirements and shall be similar to the following:

Design-Build Contractor (Firm Name)
Contract Number
Contract Name

I certify that this submittal accurate, is in strict conformance with all contract requirements, has been thoroughly coordinated and cross checked against all other applicable disciplines to prevent the omission of vital information, that all conflicts have been resolved, and that repetition has been avoided and, it is complete and in sufficient detail to allow ready determination of compliance with contract requirements by the Contracting Officer.

Name of CQC System Manager: _____

Signature of CQC System Manager: _____

Date: _____

1.4 ENGLISH LANGUAGE

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All specifications, drawings, design analysis, design calculations, shop drawings, catalog data, materials lists, and equipment schedules submitted shall be in the English language. However, the local language of host country shall be added to project as-built drawings.

1.5 UNITS OF MEASUREMENT

Design documents shall be prepared in METRIC MEASUREMENTS.

The metric units used are the International System of Units (SI) developed and maintained by the General Conference on Weights and Measures (CGPM); the name International System of Units and the international abbreviation SI were adopted by the 11th CGPM in 1960.

1.5.1 Drawings

1.5.1.1 All site layout data shall be dimensioned in meters or coordinates, as appropriate. All details and pipe sizes shall be dimensioned in millimeters.

1.5.1.2 All site plans shall be geo-referenced using the WGS 1984 coordinate system, specifically the following: WGS 1984 UTM one 42 N. If the designer is not able to use the stated coordinate system the coordinate system used shall be correlated to the stated coordinate system. A table shall be provided within the site drawing set cross referencing the WGS84 system to that utilized. This is required to allow AED to incorporate the plans into GIS for storage, map production, and possible geospatial analysis of the different work sites.

1.5.2 Design Calculations

Calculations shall be in English or SI units as deemed appropriate by the designer to meet the requirements of the design. Calculations shall be in SI (metric) units to meet the requirements of the design. Quantities on the contract drawings stated in SI (metric) units, may also be stated in English units.

1.5.3 Specifications

All equipment and products shall be specified according to U.S. standards and International standards as described by appropriate units as required herein.

1.6 WITHHOLDING OF PAYMENT FOR SUBMITTALS

1.6.1 Design Submittals

Payment for Design work will not be made in whole or in part until the Government has reviewed and cleared the design for construction.

1.6.2 Construction Submittals

Payment for materials incorporated in the work will not be made if required approvals have not been obtained. In event under separate clause of the contract, the Design-Build Contractor is allowed partial or total invoice payment for materials shipped from the Continental United States (CONUS), and/or stored at the site, the Design-Build Contractor shall with his request for such payment, submit copies of approvals (ENG Form 4025) certifying that the materials that are being shipped and/or stored have been approved and are in full compliance with the contract technical specifications.

PART 2 PRODUCTS

2.1 GENERAL

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The following are contract deliverables which give further details about and finalize the design parameters/requirements outlined within the contract documents. They shall be prepared in such a fashion that the Prime Contractor is responsible to the Government and not as an internal document between the Prime Contractor and its Subcontractors, Vendors, Suppliers, etc.

An interim building design package submittal shall contain as a minimum, the following (but only that information applicable to the individual design package):

2.1.1.1. Landscape, Planting and Turfing

2.1.1.2. Architectural

2.1.1.3. Structural Systems (Required for Variance)

1.1.1.3.1. Identify all loads to be used for design

1.1.1.3.2. Describe the method of providing lateral stability for the structural system to meet seismic and wind load requirements. Include sufficient calculations to verify the adequacy of the method

1.1.1.3.3. Calculations for all principal roof, floor, and foundation members and bracing and secondary members.

1.1.1.3.4. Drawings showing principal members for roof and floor framing plans as applicable

1.1.1.3.5. Foundation plan showing main foundation elements where applicable

1.1.1.3.6. Typical sections for roof, floor, and foundation conditions

1.1.1.3.7. Complete seismic analyses for all building structural, mechanical, electrical, architectural, and building features as dictated by the seismic zone for which the facility is being constructed.

2.1.1.4. Plumbing Systems

2.1.1.5. HVAC Systems

1.1.1.5.1. Design Analysis: Based on the results of calculations, provide a complete list of the materials and equipment proposed with the manufacturer's published cataloged product installation specifications and roughing-in data.

1.1.1.5.2. Mechanical Floor Plans: The floor plans shall show all principle architectural features of the building which will affect the mechanical design. The floor plans shall also show the following:

- Capacity
- Electrical characteristics
- Efficiency (if applicable)
- Manufacturer's name
- Optional features to be provided
- Physical size

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- Minimum maintenance clearances

1.1.1.5.3. Details: Construction details, sections, elevations, etc., shall be provided only where required for clarification of methods and materials of design.

1.1.1.5.4. HVAC Controls: Complete HVAC controls equipment schedules, sequences of operation, wiring and logic diagrams, Input/Output Tables, equipment schedules, and all associated information shall be submitted. See the Statement of Work for additional specific requirements.

2.1.1.6. Electrical Systems

1.1.1.6.1. Load Center Panelboard Schedule(s): Schedule shall indicate the following information:

- Panelboard Characteristics (Panel Designation, Voltage, Phase, Wires, Main Breaker Rating and Mounting).
- Branch Circuit Designations.
- Load Designations.
- Circuit Breaker Characteristics. (Number of Poles, Trip Rating, AIC Rating)
- Branch Circuit Connected Loads (AMPS).
- Special Features.

1.1.1.6.2. Lighting Fixture Schedule: (Schedule shall indicate the following information:)

- Fixture Designation.
- General Fixture Description.
- Number and Type of Lamp(s).
- Type of Mounting.
- Special Features.

1.1.1.6.3. Details: Construction details, sections, elevations, etc., shall be provided only where required for clarification of methods and materials of design.

2.2 DESIGN ANALYSIS (FOR ALL CIVIL WORKS)

2.2.1 A design analysis, written in the English Language with SI units of measure with (English unit in parentheses, as applicable), shall be submitted for review by the Government. The design analysis is a written explanation of the project design which is expanded and revised (updated) as the design progresses. The design analysis shall contain all explanatory material giving the design rationale for any design decisions which would not be obvious to an engineer reviewing the final drawings and specifications. The design analysis contains the criteria for and the history of the project design, including criteria furnished by the Government, letters, codes, references, conference minutes, and pertinent research. Design calculations, computerized and manual, are included in the design analysis. Narrative descriptions of design solutions are also included. Written material may be illustrated by diagrams and sketches to convey design concepts. Catalog cuts and manufacturer's data for all equipment items, shall be submitted. Copies of all previous design phase review comments and the actions assigned to them shall be included with each submission of the design analysis. Specific requirements for the design analysis, listed by submittal phase, are contained hereinafter.

2.2.2 The Contractor shall prepare and present design analyses with calculations necessary to substantiate and support all design documents submitted. For parts including sitework, site specific civil calculations shall be included. For parts including structural work, structural calculations shall be included. The Contractor shall submit the geotechnical evaluation report, reports of soil borings and any other foundation investigations performed in support of design of sitework, utilities, foundations, etc. with the appropriate design package(s).

2.2.3 Format of design analysis shall closely match the standard format referenced within the request for proposal (RFP).

2.3 DESIGN CALCULATIONS

When they are voluminous, they shall be bound separately from the narrative part of the design analysis. The design calculations shall be presented in a clean and legible form incorporating a title page and index for each volume. A table of contents, which shall be an index of the indices, shall be furnished when there is more than one volume. The source of loading conditions, supplementary sketches, graphs, formulae, and references shall be identified. Assumptions and conclusions shall be explained. Calculation sheets shall carry the names or initials of the computer and the checker and the dates of calculations and checking. No portion of the calculations shall be computed and checked by the same person.

2.3.1 Automatic Data Processing Systems (ADPS)

When ADPS are used to perform design calculations, the design analysis shall include descriptions of the computer programs used and copies of the ADPS input data and output summaries. When the computer output is large, it may be divided into volumes at logical division points.

2.3.1.1 Computer Printouts

Each set of computer printouts shall be preceded by an index and by a description of the computation performed. If several sets of computations are submitted, they shall be accompanied by a general table of contents in addition to the individual indices.

2.3.1.2 Preparation of the Description

Preparation of the description which must accompany each set of ADPS printouts shall include the following.

- a. Explain the design method, including assumptions, theories and formulae.
- b. Include applicable diagrams, adequately identified.
- c. State exactly the computation performed by the computer.
- d. Provide all necessary explanations of the computer printout format, symbols, and abbreviations.
- e. Use adequate and consistent notation.
- f. Provide sufficient information to permit manual checks of the results.

2.4 SPECIFICATIONS

Specifications shall be prepared in accordance with the Construction Specifications Institute (CSI) format. The Design-Build Contractor prepared specifications shall include as a minimum, all ANP Border Police Company Compounds
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applicable specification sections referenced by the CSI. Where the CSI does not reference a specification section for specific work to be performed by this contract, the Design-Build Contractor shall be responsible for creating the required specification. The contractor shall add Section 1 given to the Contractor by the Government to the specifications.

2.4.1 Preparation of Proprietary Non-Generic Design Documents

During the course of design, the designer shall specify specific proprietary materials, equipment, systems, and patented processes by trade name, make, or catalog number. The subsequent use of construction submittals to supplant and/or supplement incomplete design effort is unacceptable. Design submittals containing non-proprietary and/or generic design criteria where proprietary items are available, will be returned for resubmission.

2.4.2 Use of Unified Facilities Guide Specifications (UFGS)

If UFGS are used, it is the sole responsibility of the Design-Build Contractor to prepare these specifications in strict conformance with the paragraph entitled PREPARATION OF PROPRIETARY NON-GENERIC DESIGN DOCUMENTS. UFGS containing non-proprietary and/or generic design criteria, where proprietary items are available, will be returned for resubmission. If the UFGS contains a "SUBMITTALS" paragraph, the Design-Build Contractor shall delete it and incorporate all required information directly into the design documents. Under no circumstances will the Design-Build Contractor be permitted to use submittals and shop drawings to finalize an incomplete design. UFGS (Uniform Federal Guide Specifications) are required for this project when U.S. products and systems are required or used. Current UFGS information may be obtained at the following location:

http://www.wbdg.org/ccb/browse_org.php?o=70.

Specifications for UFGS are in SpecsIntact format. SpecsIntact is government sponsored software used to edit specifications for government contracts. The software is available at the following link: <http://specsintact.ksc.nasa.gov/index.asp>.

2.4.3 Quality Control and Testing

Specifications shall include required quality control and further indicate all testing to be conducted by the Design-Build Contractor, its subcontractors, vendors and/or suppliers.

2.4.4 Ambiguities and indefinite specifications

Ambiguities, indefinite specification requirements (e.g., highest quality, workmanlike manner, as necessary, where appropriate, as directed etc) and language open to interpretation is unacceptable.

2.4.5 Industry Standards

2.4.5.1 U.S. Industry Standards

The Specifications shall be based on internationally accepted U.S. industry Standards. Customarily accepted publications may be found in the UNIFIED MASTER REFERENCE LIST (UMRL) which may be located at the following URL: <http://www.hnd.usace.army.mil/techinfo/UFGS/UFGSref.htm>.

To access the UMRL select the "Unified Facilities Guide Specifications" tab and scroll down to Unified Master Reference List (UMRL) (PDF version).

Examples of U.S. standards are: National Fire Protection Association (NFPA), International Building Code (IBC), American Concrete Institute (ACI), American Water Works Association
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(AWWA), ADAAG (ADA Accessibility Guidelines) for Buildings and Facilities, etc. Standards referenced shall be by specific issue; the revision letter, date or other specific identification shall be included.

This document lists publications referenced in the Unified Facilities Guide Specifications (UFGS) of the Corps of Engineers (USACE), the Naval Facilities Engineering Command (NAVFAC), the Air Force Civil Engineer Support Agency (AFCESA), and the guide specifications of the National Aeronautics and Space Administration (NASA). This document is maintained by the National Institute of Building Sciences (NIBS) based on information provided by the agencies involved and the standards producing organizations. The listing is current with information available to NIBS on the date of this publication.

Standards referenced in specifications and drawings prepared by the Design-Build Contractor shall be by specific issue; the revision letter, date or other specific identification shall be included.

2.4.5.2 Non U.S. Industry Standards

If non U.S. industry standards (e.g., codes, regulations, or technical references and norms) are authorized for use under this contract and are incorporated in the Design-Build Contractor's design, one (1) copy of each standard referenced shall be provided to the Government.

Where a U.S. design and/or construction standard cannot be referenced due to non-availability of products and/or systems, another specification format using the CSI guidelines may be utilized for that particular product and/or system. If a majority of the specifications within this project reference non-U.S. products due to availability and/or other factors, the entire set of specifications are not required to be in UFGS and SpecsIntact format.

2.4.6 Incorporation of Government review comments

Subsequent to submission to the Government, the specifications shall be finalized by the incorporation of Government review comments.

2.5 DRAWINGS

Drawings, prepared in the English language with metric units of measure, are a part of each submittal. The working drawings shall be adequately labeled and cross-referenced for review. Complete, thoroughly checked and coordinated contract drawings shall be submitted. The contract drawings submitted for final review shall include the drawings previously submitted which have been revised and completed as necessary. The Design-Build Contractor shall have incorporated any design review comments generated by previous design review(s), have completed all of his constructability and coordination checks, and have the drawings in a Ready-to-Build condition. The drawings shall be complete at this time and contain all the details necessary to ensure a clear understanding of the work throughout construction.

2.5.1 Drawing Size

If project is required to be in SI units, all drawings shall be prepared in size "A1" sheets (594mm by 841mm). If project is required to be in English units, all drawings shall be modified Architectural D size (24 inches by 36 inches) sheets. Design submissions may be prepared in True half size "A2" sheets or (12 inches by 18 inches) to save paper and for ease of review. All final contract drawing sets shall be prepared with full size sheets. Drawings shall be trimmed to size if necessary.

2.5.2 Computer Assisted Design and Drafting (CADD)

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Computer Assisted Design and Drafting (CADD) is required for all work related to this contract. The CADD deliverables shall meet the requirements of the AEC CAD Standard Release 2.0. Emphasis is on drawings meeting sheet layout standards, level/layer naming standards and sheet naming conventions. CAD standards may be found at the following link: <https://tsc.wes.army.mil/products/standards/aec/aecstdweb.asp>. Transatlantic Programs Center Design Instructions Manual, Chapter 22 entitled COMPUTER ASSISTED DESIGN AND DRAFTING. The Contractor shall furnish the digital as-built drawing files in .DWG file format utilizing AutoDesk AutoCAD version 2000 or later. Drawings prepared in any convention other than CADD, must have approval of the Contracting Officer. The Contractor shall also provide all drawings in PDF format at every submittal stage.

2.5.3 Plotter Prepared Original Drawings

Plotter prepared original drawings shall be prepared on 20 pound bond paper, unless otherwise approved and shall be plotted on the matte side. Raster plotters must provide a minimum resolution of 400 dpi while vector plotters shall provide a minimum resolution of 0.0010 inch with an accuracy of +0.1% of the move and a repeatability error of not more than 0.005 inch. Drawings produced from dot matrix plotters are not acceptable. Plots accompanied by the digital design file may be prepared on vellum: translucent bond is not acceptable. Line density shall be equivalent to that produced by black India ink: half-tones and gray scale plots are not acceptable unless otherwise approved. Manual changes to plotted originals are not acceptable.

2.5.4 Half-Size Reduction

Preparation of all work shall accommodate true half size reduction unless instructed otherwise by the Contracting Officer.

2.5.5 Symbols and Abbreviations

Symbols and abbreviations shall be in accordance with AEC CAD Standard Release 2.0 or later.

2.5.6 Design Discipline Designation Format

Referencing AEC CAD Standard Release 2.0, the drawing package shall be divided into the following proposed divisions:

<u>Discipline</u>	<u>Designation</u>	<u>Discipline</u>
Use the following for AEC CAD Standard Release 2.0:		
C		Civil
S		Structural
A		Architectural
F		Fire Protection and Life Safety
P		Plumbing
M		Mechanical
E		Electrical and Communication

Each drawing for the particular facility shall be designated by the discipline designation and sheet number and shall be consecutive within each discipline. AEC CAD Standard, referenced herein, shall be adhered to, especially with regard to sheet naming, numbering and level/layer naming standards. Copies of level/layer naming standards are available at the following locations (in comma delimited format - .CSV) and may be imported into AutoCAD:

Public FTP site:

ftp://anonymous:anonymous@ftp.usace.army.mil/pub/aed/Standards/AEC_Nat_CAD_Std/level_libraries/

SharePoint site:

https://aedsharepoint.tac.usace.army.mil/C16/Drawings/Document%20Library/AEC_CAD_level_templates.ZIP

2.5.7 Grouping Drawings

A building or individual facility design shall, except for site development drawings, be grouped in the design drawing package so that a single building may be withdrawn by deleting or removing a consecutive block of sheets.

2.5.8 Title and Revision Block

Title and revision block shall match FIGURES 1 through 4 furnished in the paragraph entitled ATTACHMENTS.

2.5.9 Drawing Scales

The scales indicated on the following list shall, in general, be used for all drawings. The Contractor may, at its option, make exceptions to scales indicated, if approved in writing by the Contracting Officer.

Site, Grading and Utility Plans - [1:500, if in SI units] [1" = 200' but as large as practical, if in English units]

Key Plans as large as practical

Cross Sections/elevations (as large scale as possible to adequately show required detail) - [1:100, if in SI units] [1/8" = 1'-0" or 1/4" = 1'-0", if in English units]

Details - [1:10 minimum, if in SI units] [1-1/2" = 1'-0" or 3" = 1'-0" if in English units]

2.5.10 Binding

All volumes of drawing prints shall be firmly bound and shall have covers of heavier bond than the drawing sheets. If posts are used to fasten sheets together, the drilled holes on the bond edges of the sheets shall be on 8-1/2-inch centers.

2.5.11 Typical Sheets

Typical sheets of standard details uniformly used on all buildings are authorized and encouraged. Sheets of standard details may be prepared so that they can be reused if the design package must be divided into separate construction packages. Each typical detail drawing sheet may be limited to a particular design discipline. Standard detail sheets shall be organized by discipline as are the other drawing sheets. Details peculiar to one facility shall not be shown in the standard details but with the group of drawings for the facility to which it pertains.

2.5.12 Index Sheet(s)

The first sheet of each volume in a project shall be a cover sheet. In general, the second sheet shall be the first index. Multiple index sheets may be required, depending on the project size. All index sheets shall be included with each volume of drawings and shall be an index of all the individual drawings in all volumes. The index shall list sequentially the site development

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drawings, each facility's drawings, and the standard details drawings (if any), and shall locate them by volume and file number. Each index sheet shall be signed and stamped by a principal of the Design-Build Contractor.

2.5.13 Drawing File Number

The File Number is unique to each drawing and is a combination of a project location code, project number, facility designator and the CADD file name. Unassigned numbers or skipped sheets shall be labeled as "Not Used" on the index sheets. Cover sheets are not numbered.

2.5.14 Specifications Placed on the Drawings

Details of standard products or items which are adequately covered by specifications shall not be included on the drawings.

2.5.15 Legends

For each submittal, legends of symbols and lists of abbreviations shall be placed on the drawings. They shall include all of the symbols and abbreviations used in the drawing set, but shall exclude any symbols and abbreviations not used. Since many symbols are limited to certain design disciplines, there is a definite advantage to the use of separate legends on the initial sheet of each design discipline or in the Standard Details package for each discipline. If legends have not been shown by discipline, a legend shall be placed on the first drawing.

2.5.16 Location Grid

To facilitate the location of project elements and the coordination of the various disciplines' drawings, all plans shall indicate a column line or planning grid, and all floor plans (except structural plans) shall show room numbers.

2.5.17 Composite and Key Plans

If the plan of a large building or structure must be placed on two or more sheets in order to maintain proper scale, the total plan shall be placed on one sheet at a smaller scale. Appropriate key plans and match lines shall appear on segmented drawings. Key plans shall be used not only to relate large scale plans to total floor plans but also to relate individual buildings to complexes of buildings. Key plans shall be drawn in a convenient location and shall indicate the relative location of the represented plan area by crosshatching.

2.5.18 Revisions

Drawing revisions shall be prepared only on the original CADD files. A revision area is required on all sheets.

PART 3 EXECUTION

3.1 GENERAL

3.1.1 Design Concept Coordination Meeting

In addition to regular meetings with the Government the Contractor shall conduct formal status briefings on a bi-weekly basis, as a minimum, to provide a management overview of design development. Shortly after contract award the Government may choose to conduct meetings with the Design-Build Contractor to refine proposal concept features. The purpose of the meeting is to assure attention to project requirements and to suggest ways of improving the design prior to tentative level submissions.

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3.1.2 Government Design Changes

Government design changes which do not increase construction costs shall be made at no charge to the Government. The Contracting Officer may request design submittals in addition to those listed when deemed necessary to adequately describe the work covered in the contract documents. Submittals shall be made in the respective number of copies and to the respective addresses set forth in the paragraph entitled SUBMITTAL PROCEDURE. Each submittal shall be complete and in sufficient detail to allow ready determination of compliance with contract requirements.

3.2 SUBMITTAL REGISTERS

3.2.1 Contractor-Furnished Design Documents Submittal Register (TAC Form 122-E)

3.2.1.1 General

The Contractor shall submit as part of his Project Schedule, information regarding the submittal and clearance for construction of Contractor furnished design documents. In addition, the Contractor shall provide a complete submittal register in the sample format (TAC Form 122-E - Contractor Furnished Design Documents Submittal Register) which is attached to this section. The Contractor shall, within fifteen (15) calendar days after approval of the Project Schedule, submit (3) copies of his finalized Contractor Furnished Design Document Submittal Register to the Contracting Officer for approval. The submittal register shall consist of a tabulation of all the Contractor furnished design documents with the indicated dates integrated into the Design Progress Schedule. The Contractor shall post all actual dates of submittal actions (including clearance for construction) as they occur. Revisions shall be made at minimum on a monthly basis to keep the submittal register in agreement with the scheduled dates shown in the network mathematical analysis. (3) copies of the revised submittal register shall be furnished to the Contracting Officer at the time revisions are made in the network mathematical analysis.

3.2.1.2 Additions or Revisions

Any additions or changes required to be made to the TAC Form 122-E as a result of the Contracting Officer's review shall be incorporated into the TAC Form 122-E by the Contractor and a resubmittal of (3) copies shall be affected within five (5) calendar days after receipt of the Contracting Officer's review comments.

3.2.2 Construction Submittal Register (ENG Form 4288)

Attached to this section is ENG Form 4288 which the Contractor is responsible for developing for this contract. All construction submittals shall be shown on this register. The submittal register shall be the controlling document and will be used to control all construction submittals throughout the life of the contract. The Contractor shall maintain and update the register on a monthly basis for the Contracting Officer's approval.

3.3 TRANSMITTAL FORM (ENG Form 4025)

The sample transmittal form (ENG Form 4025) attached to this section shall be used for submitting both design and construction submittals in accordance with the instructions on the reverse side of the form. These forms will be furnished to the Contractor. This form shall be properly completed by filling out all the heading blank spaces and identifying each item submitted. Special care will be exercised to ensure proper listing of the specification paragraph and/or sheet number of the contract drawings pertinent to the data submitted for each item.

3.4 PROGRESS SCHEDULE

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The Contractor shall prepare and submit a design progress schedule to the Contracting Officer. The Critical Path Method (CPM) of network calculation shall be used to generate the Project Schedule. The progress schedule shall show, as a percentage of the total design price, the various items included in the contract and the order in which the Contractor proposes to carry on the work, with dates on which he will start the features of the work and the contemplated dates for completing same. Significant milestones such as review submittals shall be annotated. The Contractor shall assign sufficient technical, supervisory and administrative personnel to insure the prosecution of the work in accordance with the progress schedule. The Contractor shall correct the progress schedule at the end of each month and shall deliver (3) copies to the Contracting Officer. The approved Project Schedule shall be used to measure the progress of the work, to aid in evaluating time extensions, and to provide the basis of all progress payments.

3.5 SCHEDULING

3.5.1 Design Submittals

Adequate time (a minimum of fourteen (14) calendar days exclusive of mailing time) shall be allowed for review and clearance for construction. If the Contractor fails to submit design submittals in a timely fashion, or repetitively submits design submittals that are not in strict conformance with the contract documents, no part of the time lost due to such actions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.5.2 Post Design Construction Submittals

Submittals covering component items forming a system or items that are interrelated shall be scheduled to be coordinated and submitted concurrently. Certifications to be submitted with the pertinent drawings shall be so scheduled. Adequate time (a minimum of fourteen (14) calendar days exclusive of mailing time) shall be allowed for review and approval. If the Contractor fails to submit post design construction submittals in a timely fashion, or repetitively submits submittals that are not in strict conformance with the contract documents, no part of the time lost due to actions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.6 SUBMITTAL PROCEDURE

3.6.1 Design Submittals

3.6.1.1 Afghanistan Engineer District (AED)

Refer to Submittal Distribution and Quantities **Table Attachment A.**

This is a Design-Build project and in accordance with Contract Clause 52.227-7022 GOVERNMENT RIGHTS (UNLIMITED), the Government has non-exclusive rights to use the design on other projects. Therefore, the As-Builts furnished to the Government must be in an editable format.

3.6.1.2 Editable CADD Format As-Builts

In accordance with section 01060 SPECIAL CLAUSES clause PREPARATION OF AS-BUILT DRAWINGS (CONTRACTOR), one (1) set of the Government approved As-Builts shall be submitted to the following address in an editable CADD format:

AFGHANISTAN ENGINEER DISTRICT

(1) DHL, FEDEX, UPS or any other courier service:

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U.S. Army Corps of Engineers
Afghanistan Engineer District
House # 1, St. #1 West
West Wazir Akbar High School
Behind Amani High School
Kabul, Afghanistan
Attn.: Engineering Office

(2) U.S. Postal Service:
U.S. Army Corps of Engineers
Afghanistan Engineer District (CEAED-EC)
Attn.: Qalaa House
APO AE 09356
Attn.: Engineering Office

This requirement is in addition to all other submission requirements stated elsewhere in the contract.

3.6.1.5 Digital Transmission of Design Submittals

The Design-Build Contractor shall not be permitted to submit design deliverables addressed by this specification in digital format in lieu of hard copies without the expressed written approval from the government.

3.6.2 Post Design Construction Submittals

Three (3) copies of all post design construction submittals shall be transmitted to the Resident field office administering the construction portion of the contract. The address will be given at a later date after award.

Submittals of Operations and Maintenance (O & M) Manuals in (3) copies shall be as follows:

AFGHANISTAN ENGINEER DISTRICT

(1) DHL, FEDEX, UPS or any other courier service:
U.S. Army Corps of Engineers
Afghanistan Engineer District
House # 1, St. #1 West
West Wazir Akbar High School
Behind Amani High School
Kabul, Afghanistan
Attn.: Engineering Department

(2) U.S. Postal Service:
U.S. Army Corps of Engineers
Afghanistan Engineer District (CEAED-EC)
Attn.: Qalaa House
APO AE 09356
Attn.: Engineering Department

3.6.3 Submittal Numbering System

Instructions on the numbering system to be used for construction submittals follows:

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3.6.3.1 Submittals

Shop drawings and materials are listed on the Submittal Register (ENG Form 4288) as follows:

a. List is prepared according to contract specifications and drawings, picking up all items involved in the project.

b. This list is divided into sections as indicated in the specifications for example:

Sec. 01015	"Technical Requirements"
Sec. 02831	"Chain-Link Fence"
Sec. 02710	"Subdrainage System"
Sec. 03300	"Concrete For Building Construction"
Sec. 04200	"Masonry"

3.6.3.2 Numbering procedures for transmittal on ENG FORM 4025

a. Each section, may include a list of items. All these items will then be listed with a progressive number within the sections they belong to, for example:

Sec. 01015	will have 01015.00 (Basic number)
Item x	" " 01015.01
Item y	" " 01015.02
Item z	" " 01015.03

Sec. 02710	will have 02710.00 (Basic number)
Item x	" " 02710.01
Item y	" " 02710.02
Item z	" " 02710.03

Sec. 02600	will have 02600.00 (Basic number)
Item x	" " 02600.01
Item y	" " 02600.02

Sec. 03300	will have 03300.00 (Basic number)
Item x	" " 03300.01
Item y	" " 03300.02

etc.

b. It is evident a transmittal will never show a Section number i.e., 02831.00, 03300.00, etc., since these are only the basic numbers of the system. Numbers on transmittals will be the item numbers, i.e., 01015.01, 02710.01, 02710.02, 02710.03, 03300.01, 03300.02, etc. All items, as listed on the Submittal Register, will be submitted via a separate transmittal form ENG FORM 4025 thus avoiding getting together more than one item (as listed) and more than one number. There are items, on the other hand, which may be submitted all together on the same transmittal form. This must be established before submission is made.

c. Sec. 10800 "Toilet Accessories" - this section will have basic number 10800.00 - all items relative to it will be listed one by one on separate lines. ONLY one transmittal number will then be given for all of these "10800.01" which will include i.e., robe hook, toilet paper holder, mirror, soap holder, cabinet for paper towels, etc. Each one of these items will be listed on the same Transmittal Number 10800.01 as item 1, item 2, item 3, etc.

3.6.3.3 Resubmittals

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Should the Contractor be required to resubmit any transmittal, it will be accomplished by utilizing the same transmittal number followed by the number "-1" for the first resubmittal, "-2" for the second resubmittal, "-3" for the third resubmittal, etc. For example, a first resubmittal would be "SUBMITTAL PROCEDURES FOR DESIGN BUILD PROJECT" 01335.01-1, a second resubmittal 01335.01-2, etc. The purpose of this system is to avoid deviations from Submittal Register and, to avoid confusion arising from the use of more than one number on transmittal when more than one item is submitted on the same form. This system will also facilitate the use, wherever required, on machine printouts.

3.6.4 Variations

If design documents or construction submittals show variations from the contract parameters and/or requirements, the Contractor shall justify such variations in writing, at the time of submission. Additionally, the Contractor shall also annotate block "h" entitled "variation" of ENG FORM 4025. After design submittals have been reviewed and cleared for construction by the Contracting Officer, no resubmittal for the purpose of substituting materials, equipment, systems, and patented processes will be considered unless accompanied by the following:

- a. Reason or purpose for proposed variation, substitution, or revision.
- b. How does quality of variation compare with quality of the specified item? This shall be in the form of a technical evaluation tabulating differences between the item(s) originally specified and what is proposed.
- c. Provide a cost comparison. This shall include an acquisition and life cycle cost comparison.
- d. For proprietary materials, products, systems, and patented processes a certification signed by an official authorized to certify in behalf of the manufacturing company that the proposed substitution meets or exceeds what was originally specified.
- e. For all other actions, a certification signed by a licensed professional engineer or architect certifying that the proposed variation or revision meets or exceeds what was originally specified.
- f. Advantage to the Government, if variation is approved, i.e. Operation and Maintenance considerations, better product, etc.
- g. Ramifications and impact, if not approved.

If the Government review detects any items not in compliance with contract requirements or items requiring further clarification, the Contractor will be so advised. Lack of notification by the Contracting Officer of any non-complying item does not relieve the Contractor of any contractual obligation.

3.6.5 Non-Compliance

The Contracting Officer will notify the Contractor of any detected noncompliance with the requirements of this specification. The Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Contractor at the worksite, shall be deemed sufficient for the purpose of notification. If the Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.7 REVIEW OF CONTRACTOR PREPARED DESIGN DOCUMENTS

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3.7.1 General

The work under contract will be subject to continuous review by representatives of the Contracting Officer. Additionally, joint design review conferences with representation by all organizations having a direct interest in the items under review may be held. The Design-Build Contractor shall furnish copies of all drawings and related documents to be reviewed at the review conference on or before the date indicated by the Government. Additional conferences pertaining to specific problems may be requested by the Design-Build Contractor or may be directed by the Contracting Officer as necessary to progress the work. The Design-Build Contractor shall prepare minutes of all conferences and shall furnish two copies to the Contracting Officer within seven (7) days after the conference.

All design submittal reviews shall be reviewed and comments and entered into DrChecks located on the website at: <https://www.projnet.org/projnet/binKornHome/index.cfm>

3.7.2 Independent Design Review

The Design-Build Contractor shall have someone other than the Designer or Design Team perform an independent review of all specifications, drawings, design analysis, calculations, and other required data prior to submission to the Government. Upon completion of this review, the Design-Build Contractor shall certify that each design submittal is complete, accurate, is in strict conformance with all contract requirements, that repetition has been avoided, that all conflicts have been resolved, and that the documents have thoroughly coordinated and cross checked against all the applicable disciplines to prevent the omission of vital information.

3.7.3 Contractor's Quality Control Organization Review

This review shall be for the purposes of eliminating errors, interferences, and inconsistencies, and of incorporating design criteria, review comments, specifications, and any additional information required. Design submittals submitted to the Contracting officer without evidence of the Contractor's certified approval will be returned for resubmission. No part of the time lost due to such resubmissions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor.

3.7.4 Government Review

Within **10** days after Notice to Proceed, the Contractor shall submit, for approval, a complete design schedule with all submittals and review times indicated in calendar dates. The Contractor shall update this schedule monthly. After receipt, the Government will be allowed ~~fifteen (15)~~ fourteen (14) days to review and comment on each design submittal and ~~fifteen (15)~~ fourteen (14) days to review and comment on each submittal, except as noted below. For each design review submittal, comments from the various design sections and from other concerned agencies involved in the review process will be made in the on-line review management system DrChecks_{SM} (<https://www.projnet.org/projnet/binKornHome/index.cfm>). Contractor shall coordinate with the Contracting Officer and/or Representative(s) to register for DrChecks_{SM} use. The review will be for conformance with the technical requirements of the solicitation and the Successful Offeror's (Contractor's) RFP proposal.

If a design submittal is deficient, it will be returned for correction and resubmission. The review time will begin when the corrected submittal is received.

The contractor shall not begin construction work until the Government has reviewed the contractor's design and has cleared it for construction. Clearance for construction does not mean Government approval. Government review shall not be construed as a complete check but will evaluate the general design approach and adherence to contract parameters. The Government

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Review is often limited in time and scope. Therefore, the Contractor shall not consider any review performed by the Government as an excuse for incomplete work. Upon completion of the review, all comments will be posted on the online DrChecks_{SM} review system for the Contractor. The Contracting Officer will indicate whether the design submittal has or has not been cleared for construction using the following action codes:

- A – Cleared for Construction
- B – Cleared for Construction, except as noted in attached comments
- C – Cleared for Construction, except as noted in attached comments, resubmission required
- E – NOT Cleared for Construction, see attached comments, resubmission required
- FX – Receipt acknowledged, does not comply as noted with contract requirements.

These codes shall NOT be used by the Design-Build Contractor. Design-Build Contractor's Quality Control Organization will annotate Block "g" entitled "FOR CONTRACTOR USE CODE" of Eng Form 4025-R using the action codes listed on the reverse side of the form.

Design submittals Cleared for Construction by the Contracting Officer shall not relieve the Contractor from responsibility for any design errors or omissions and any liability associated with such errors, nor from responsibility for complying with the requirements of this contract.

3.7.4.1 Incorporation of Government Review Comments

If the Contractor disagrees technically with any comment or comments and does not intend to comply with the comment, he must clearly outline, with ample justification, the reasons for noncompliance within five (5) days after close of review period in order that the comment can be resolved. The Contractor shall furnish disposition of all comments in DrChecks_{SM}, and with the next scheduled submittal. The disposition shall identify action taken with citation of location within the relevant design document. Generalized statements of intention such as "will comply" or "will revise the specification" are not acceptable. The Contractor is cautioned that if he believes the action required by any comment exceeds the requirements of this contract, that he should flag the comment in DrChecks_{SM} as a scope change, and notify the COR in writing immediately. If a design submittal is over one (1) day late in accordance with the latest design schedule, the Government review period may be extended 7 days. Submittals date revisions must be made in writing at least five (5) days prior to the submittal. During the design review process, comments will be made on the design submittals that will change the drawings and specifications. The Government will make no additional payments to the Contractor for the incorporation of comments. Review comments are considered part of the design-build process.

3.7.4.2 Conferences

As necessary, conferences will be conducted between the Design-Build contractor and the Government to resolve review comments.

Two review conferences will be held for each design submittal. One review conference will be held at the installation, and the second review conference will be held at the Corps District Office in Kabul, Afghanistan. For each design submittal, a review conference will be held at a location to be determined. The Contractor shall bring the personnel that developed the design submittal to the review conference. These conferences will take place the week after review periods.

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3.7.4.3 Design Deficiencies

Design deficiencies noted by the Government shall be corrected prior to the start of design for subsequent features of work which may be affected by, or need to be built upon, the deficient design work.

3.7.5 Design Discrepancies

The Design-Build Contractor shall be responsible for the correction of incomplete design data, omissions, and design discrepancies which become apparent during construction. The Design-Build Contractor shall provide the Contracting Officer with a proposed recommendation for correcting a design error, within three (3) calendar days after notification by the Contracting Officer. The Contracting Officer will notify the Design-Build Contractor of any detected noncompliance with the foregoing requirements. The Design-Build Contractor shall take immediate corrective action after receipt of such notice. Such notice, when delivered to the Design-Build Contractor at the worksite, shall be deemed sufficient for the purpose of notification. If the Design-Build Contractor fails or refuses to comply promptly, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to such stop orders shall be made the subject of claim for extension of time or for excess costs or damages by the Design-Build Contractor. Should extensions of design, fabrication plans and/or specific manufacturer's details be required as a result of a Government issued Change Order, the Government will make an equitable adjustment in accordance with Contract Clause 52.243-4 entitled CHANGES.

3.8 Phased or "Fast-Track" Design

3.8.1 General

If approved by the Government, design and construction sequencing may be effected on an incremental basis as each approved phase or portion (e.g., demolition, geotechnical, sitework, exterior utilities, foundations, substructure, superstructure, exterior closure, roofing, interior construction, mechanical, electrical, etc.) of the design is completed.

3.8.1.1 Design Phases

Complete or partial design phasing may or may not have been specified by the Government elsewhere in this contract. For construction sequencing or phasing that the Government has not specifically mandated, the Design-Build Contractor may submit a proposed phasing plan. Design phasing proposed by the Design-Build Contractor shall be submitted to the Government for approval in accordance with TAC Form 122-E CONTRACTOR FURNISHED DESIGN DOCUMENTS.

3.8.1.2 Approval of TAC Form 122-E

In all cases, TAC Form 122-E indicating the proposed phasing shall be submitted for review and approval by the contracting Officer prior to initiation of any procurement action or commencement of any construction.

3.8.2 Sequence of Design-Construction (Fast-Track)

After receipt of the Contract Notice to Proceed (NTP) the Contractor shall initiate design, comply with all design submission requirements and obtain Government review of each submission. The contractor may begin construction on portions of the work for which the Government has reviewed the final design submission and has determined satisfactory for purposes of beginning

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construction. The Contracting Officer will notify the Contractor when the design is cleared for construction. The Government will not grant any time extension for any design resubmittal required when, in the opinion of the Government, the initial submission failed to meet the minimum quality requirements as set forth in the contract.

3.8.3 Notice-to-Proceed for Limited Construction

If the Government allows the Contractor to proceed with limited construction based on pending minor revisions to the reviewed Final Design submission, no payment will be made for any in-place construction related to the pending revisions until they are completed, resubmitted and are satisfactory to the Government.

3.8.4 In-Place Construction Payment

No payment will be made for any in-place construction until all required submittals have been made, reviewed and are satisfactory to the Government.

3.8.5 Commencement of Construction

Construction of work may begin after receipt of the clearance for construction (Notice to Proceed) for each design phase. Any work performed by the Contractor prior to receipt of the clearance for construction, shall be at the Contractor's own risk and expense. Work cleared for construction that does not conform to the design parameters and/or requirements of this contract shall be corrected by the Contractor at no additional cost or time to the Government.

3.9 DESIGN STAGES

The Contractor shall schedule the number and composition of the design submittal phases. Design submittals are required at the Preliminary (65%) and Final (100%) design stages and at the Complete (100%) stage. The requirements of each design stage are listed hereinafter. The number and contents of the design submittals phases shall be reflected in TAC Form 122-E as well as in the Contractor's design progress schedule.

3.9.1 Preliminary Design Submittal (65%) Adapt Provided Design to Specify Site and provide Complete Civil and Utilities works

The review of this submittal is primarily to ensure that the Contractor has taken an inventory of the existing conditions at each proposed site, has established the most desirable functional relationships between the various project elements, has provided the technical solution to how the functional and technical requirements will be met, and to show Contractor compliance (or justify noncompliance) with the design parameters and/or requirements. Refer to requirements herein for specific submittal requirements. As a minimum, the submittal shall consist of the following:

- a. **Geotechnical Report, Site Topographic Survey, Grading plan, Soil Percolate Test Resolves and 100% Complete Civil Package. Including but not limited to: Civil plans, all utility plans, storm water plans, waste water plans, grading plans, and all details.**
- b. **Design drawings provided in RFP and if there are any edits contractor must show edits in bubbles and request variance from the given design for approval.**

- c. A soft copy (CD) of the design drawings (in CAD format and PDF format), specifications, and design analysis (all documents in PDF format) shall be submitted at this stage and all other subsequent stages of the design process.
- d. Draft Construction Cost Estimate breakout

3.9.2 Design Review Submittal (99%)

After the 65% DESIGN SUBMITTAL review, the Contractor shall revise the Contract Documents by incorporating any comments generated during the 65% DESIGN REVIEW SUBMITTAL and shall prepare final hard copy Construction Specifications. The Contractor shall submit the following documents for the design complete submittal:

- a. Site Construction Drawings with design drawings provided by government.

b. Geotechnical Report, Site Topographic Survey, Grading plan, Soil Percolate Test Resolves (100% Complete Civil Package)

- c. A soft copy (CD) of the design drawings (in Cad format and PDF), specifications, and design analysis (all documents in PDF format) shall be submitted at this stage and all other subsequent stages of the design process.
- d. The Government's Preliminay (65%) DESIGN REVIEW SUBMITTAL comments with the Contractor's annotation to each comment.

3.9.3 "Cleared for Construction" Final Design Submittal (100%)

After the 99% DESIGN SUBMITTAL review, the Contractor shall revise the Contract Documents by incorporating any comments generated during the 99% DESIGN REVIEW SUBMITTAL and shall prepare final hard copy Construction Specifications. Submittal shall be complete with all revised plans, specifications, geotechnical reports, and documentations.

Once the design documents have been "Cleared for Construction" by the Contracting Officer, the Contractor shall clearly identify each document by annotating it as "Cleared for Construction."

3.9.4 Partial Design Submittals

In the interest of expediting construction, the Contracting Officer may approve partial design submittals, procurement of materials and equipment, as well as issue the Notice To Proceed (NTP) for construction of those elements of the design which have been cleared for construction. Such partial notices to proceed shall be solely at the discretion of the Contracting Officer.

3.9.5 Design Submittals not in compliance with the contract documents

The Contractor shall, without additional compensation, correct or revise any errors or deficiencies in its design analysis, specifications, and drawings, and promptly furnish a corrected submittal in the form and number of copies as specified for the initial submittal. No part of the time lost due to such resubmissions shall be made the subject of claim for extension of time or for excess costs or damages by the Contractor. If the Contractor considers any correction indicated on the submittals to constitute a change to the contract, a notice shall be given promptly to the Contracting Officer.

3.10 GENERAL DESIGN INSTRUCTIONS

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3.10.1 Responsibility of the Design-Build Contractor

3.10.1.1 Professional Quality, Technical Accuracy, and Coordination

The Design-Build Contractor shall be responsible for the professional quality, technical accuracy, and the coordination of all design specifications, drawings, and other services furnished under this contract. Work must be organized in a manner that will assure thorough coordination between various details on drawings, between the various sections of the specifications, and between the drawings and specifications. The Design-Build Contractor shall thoroughly cross-check and coordinate all work until he is professionally satisfied that no conflicts exist, vital information has not been omitted, and that indefinite language open to interpretation has been resolved.

3.10.1.2 Deviating From The "Cleared-For-Construction" Design

(a.) The Contractor must obtain the approval of the Designer of Record (DOR) and the Government's concurrence for any Contractor proposed revision to the professionally stamped and sealed design reviewed and Cleared for Construction by the Government, before proceeding with the revision.

(b.) The Government reserves the right to non-concur with any revision to the design, which may impact furniture, furnishings, equipment selections or operations decisions that were made, based on the reviewed and cleared for construction design.

(c.) Any revision to the design, which deviates from the contract requirements (i.e., the RFP and the accepted proposal), will require a modification, pursuant to the Changes clause, in addition to Government concurrence. The Government reserves the right to disapprove such a revision.

(d.) Unless the Government initiates a change to the contract requirements, or the Government determines that the Government furnished design criteria are incorrect and must be revised, any Contractor initiated proposed change to the contract requirements, which results in additional cost, shall strictly be at the Contractor's expense.

(e.) The Contractor shall track all approved revisions to the reviewed and cleared for construction design and shall incorporate them into the as-built design documentation, in accordance with section 01060 SC entitled PREPARATION OF AS-BUILT DRAWINGS (CONTRACTOR). The Designer of Record shall document its professional concurrence on the As-Built for any revisions by affixing its stamp and seal on the drawings and specifications.

3.10.1.3 Government Oversight

The extent and character of the work to be done by the Design-Build Contractor shall be subject to the general oversight, supervision, direction, control, and review by the Contracting Officer.

3.10.1.4 Unlimited Drawing Rights

The Government shall have unlimited rights in all drawings, designs, specifications, notes and all other works developed in the performance of this contract, including the right to use same on any other Government design or construction without additional compensation to the Design-Build Contractor. The Design-Build Contractor hereby grants to the Government a paid-up license throughout the world to all such works to which he may assert or establish any claim under design patent or copyright laws.

3.10.1.5 Conflicts

Any conflicts, ambiguities, questions or problems encountered by the Design-Build Contractor in following the criteria shall be immediately submitted in writing to the Contracting Officer with the Design-Build Contractor's recommendations. Prior to submission to the Government the Design-Build Contractor shall take appropriate measures to obtain clarification of design criteria requirements, to acquire all pertinent design information, and to incorporate such information in the work being performed.

3.10.1.6 Design Specialists

Whenever a design specialist is required, the Design-Build Contractor shall submit for the approval by Contracting Officer, the name of the designated specialist along with the individual's educational background, experience, and licenses or registrations held, before design work commences. The design specialists shall be registered architects, registered professional engineers, or recognized consultants with a background of at least five (5) years design experience in the appropriate specialty. Services of design specialists may be required for the following specialties:

[Landscape Design]
[Interior Design]
[Security]
[Geotechnical Design]
[site grading ____]

3.10.2 Conduct of Work

In the performance of contract the Design-Build contractor shall:

3.10.2.1 Performance

Perform the work diligently and aggressively, and promptly advise the Contracting Officer of all significant developments.

3.10.2.2 Telephone Conversations

Prepare a summary, and promptly furnish a copy thereof to the Contracting Officer, of all telephone conversations relating to the design work under this contract.

3.10.2.3 Cooperation with Others

Cooperate fully with other firms, consultants and contractors performing work under the program to which this contract pertains, upon being advised by the Contracting Officer that such firms or individuals have a legitimate interest in the program, have need-to-know status, and proper security clearance where required.

3.10.2.4 Technical Criteria

All designs, drawings, and specifications shall be prepared in accordance with the contract documents and with the applicable publications referenced therein. As soon as possible, the Design-Build Contractor shall obtain copies of all publications applicable to this contract. Availability of publications (where to purchase) is contained in Specification Section 011015. Any deviations from the technical criteria contained in the contract documents or in the applicable publications, including the use of criteria obtained from the user or other sources, must receive prior approval of the Contracting Officer. Where the technical criteria contained or referred to

herein are not met, the Design-Build Contractor will be required to conform his design to the same at his own time and expense.

3.10.3 Design Priorities

The design of this project shall consider the remote location and harsh environment of this project and the impact this will have on sources of technical supply, the cost of construction, the low level of maintenance, and the difficulty of obtaining replacement parts. Unless stated otherwise in this contract, the following design priorities shall be followed:

3.10.3.1 CONSTRUCTION LIFE-SPAN LEVELS

Permanent Construction. Buildings and facilities shall be designed and constructed to serve a life expectancy of more than 25 years, to be energy efficient, and to have finishes, materials, and systems that are low maintenance and low life-cycle cost.

Mobilization, Emergency and Contingency Operations Construction. Buildings and facilities shall be designed and constructed to serve a specific mobilization or emergency requirement. Buildings will be austere to minimize construction time and maximize conservation of critical materials. Maintenance factors and longevity will be secondary considerations.]

3.10.3.2 Operability

Systems including but not necessarily limited to mechanical, electrical, communications, etc., must be simple to operate and easy to maintain.

3.10.3.3 Standardization

Use of standardized materials, products, equipment, and systems is necessary to minimize the requirements for replacement parts, storage facilities, and service requirements.

3.10.4 Topographic Surveys, Easements, and Utilities

Unless otherwise stated in the contract, the Design-Build Contractor will be responsible for detailed topographic mapping, available easements, and utility information for the project.

3.10.4.1 Horizontal and Vertical Control

The mapping shall be based on the base coordinate system. If the base system cannot be found, the surveyor shall use any established monuments. If monuments have been destroyed or do not exist, an assumed horizontal and vertical datum shall be established, using arbitrary coordinates of 10,000n and 10,000e and an elevation of 1,000 meters. The horizontal and vertical control established on site shall be a closed loop with third order accuracy and procedures. Provide three (3) concrete survey monuments at the survey site. All of the control points established at the site shall be plotted at the appropriate coordinate point and shall be identified by name or number, and adjusted elevations. The location of the project site, as determined by the surveyor shall be submitted in writing to the Contracting Officer. The site location shall be identified by temporary markers, approved by the Contracting Officer before proceeding with the surveying work.

3.10.4.2 Topography Requirements

A sufficient quantity of horizontal and vertical control shall be established to provide a detailed topographic survey at 1:500 scale with one quarter meter contour intervals minimum.

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Intermediate elevations shall be provided as necessary to show breaks in grade and changes in terrain.

The contours shall accurately express the relief detail and topographic shapes. In addition, 90 percent of the elevations or profiles interpolated from the contours shall be correct to within one-half of the contour interval and spot elevations shall be correct within plus or minus 20 millimeters.

Spot elevations affecting design of facilities shall be provided. Specifically, break points or control points in grades of terrain such as tops of hills, bottoms of ditches and gullies, high bank elevations, etc.

All surface and sub-surface structures features within the area to be surveyed shall be shown and identified on the topographic maps. In addition, these features shall be located by sufficient distance ties and labeled on the topographic sheets to permit accurate scaling and identification.

The location and sizes of potable, sanitary, electrical and mechanical utilities within the survey site shall be shown on the survey map. Sanitary manholes and appurtenances shall show top elevations and invert elevations.

3.10.5 Geotechnical Investigation

Unless otherwise stated in the contract, the Design-Build Contractor will be responsible for Geotechnical investigation, including subsurface explorations, sampling, field and laboratory testing, and water studies where applicable.

3.10.6 Cathodic Protection and Earth Resistance

Unless otherwise stated in the contract, the Design-Build Contractor will be responsible for determining whether cathodic protection on buried structures and underground utility systems are needed for special electrical grounding and counterpoise systems, and for gathering the field data necessary for design.

3.10.7 Water Supply and Quality Data

Unless otherwise stated in the contract, the Design-Build Contractor will be responsible for obtaining all water supply and water quality data. This data will include information on the locations and depths of all viable water supply sources at the site(s) involved and a water quantity and water quality analysis for each source.

3.10.8 Occupational Safety and Health Act

The facilities, systems, and equipment designed under this contract shall comply with the Occupational Safety and Health Act (OSHA), Code of Federal Regulations, Title 29, Chapter XVII, Parts 1910 and 1926. Any problems in incorporating these standards due to conflicts with other technical criteria shall be submitted to the Contracting Officer for resolution.

3.10.9 Asbestos Containing Materials

Asbestos containing material (ACM) will not be used in the design of new structures or systems. In the event no other material is available which will perform the required function or where the use of other material would be cost prohibitive, a waiver for the use of asbestos containing materials must be obtained from CETAC.

3.10.9.1 Existing Construction

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Asbestos containing materials (ACM) presently included in existing construction to be rehabilitated or otherwise modified as a result of this project, shall be removed and a non-asbestos containing material substituted in lieu thereof.

3.10.9.2 Suspected Asbestos Containing Materials

All such structures and systems shall be inspected to determine the presence or probable presence of ACM. When ACM is suspected, a documented survey will be performed. The survey will be developed into an abatement design and will be made a part of the design documents. In the event no other material is available which will perform the required function or the use of a substitute material would be cost prohibitive due to initial cost and tear-out of existing construction, a waiver for the retention of the asbestos containing material must be obtained from the Contracting Officer.

3.11 VALUE METHODOLOGY/VALUE ENGINEERING

The Design-Build Contractor during the course of his design shall be alert for and shall identify those high-cost low-value items or areas which he considers may be accomplished in different ways that will increase the value of the project at the same or less cost. Potential value engineering study items shall be reported to the Value Engineer through the Contracting Officer.

3.11.1 Performance Oriented Value Engineering Change Proposal (VECP)

In reference to Contract Clause 52.248-3, "Value Engineering - Construction", the Government may refuse to entertain a "Value Engineering Change Proposal" (VECP) for those "performance oriented" aspects of the Contract Documents which were addressed in the Design-Build Contractor's accepted contract proposal and which were evaluated in competition with other Proposers for award of this contract. For purposes of this clause, the term "performance oriented" refers to those aspects of the design criteria or other contract requirements which allow the Proposer or the Design-Build Contractor certain latitude, choice of and flexibility to propose in its accepted contract offer a choice of design, technical approach, design solution, construction approach or other approach to fulfill the contract requirements. Such requirements generally tend to be expressed in terms of functions to be performed, performance required or essential physical characteristics, without dictating a specific process or specific design solution for achieving the desired result.

3.11.2 Prescriptive Oriented Value Engineering Change Proposal (VECP)

The Government may consider a VECP for those "prescriptive" aspects of the Solicitation documents, not addressed in the Design-Build Contractor's accepted contract proposal or addressed but evaluated only for minimum conformance with the Solicitation requirements. For purposes of this clause, the term "prescriptive" refers to those aspects of the design criteria or other Solicitation requirements wherein the Government expressed the design solution or other requirements in terms of specific materials, approaches, systems and/or processes to be used. Prescriptive aspects typically allow the Proposers little or no freedom in the choice of design approach, materials, fabrication techniques, methods of installation or other approach to fulfill the contract requirements.

3.12 SUBMITTAL OF CONTRACTOR FURNISHED DESIGN DOCUMENTS

The requirements of this paragraph pertain to the submittal of design documents, specifications, design calculations, surveys, testing reports and other documents prepared by the Design-Build Contractor to meet the design requirements of this project.

3.12.1 Geo-technical

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3.12.1.1 Design Analysis

The Design-Build Contractor shall submit in the design analysis catalog cuts, manufacturer's data.

3.12.1.2 Specifications

Specifications for all civil utilities.

3.12.1.3 Design Drawings

Full Size and True Half-Size Design drawings shall be submitted for the following:

Refer to Submittal Distribution and Quantities Table

3.12.1.4 Manufacturer's recommendations, instructions, and certifications

Shall be submitted.

3.12.1.5 Samples

Samples shall be submitted.

3.12.1.6 Schedules

Schedules shall be submitted.

3.12.1.7 Reports

3.12.1.8 Records

Records shall be submitted.

Engineering Studies. Occasionally, in addition to the items previously mentioned, engineering studies that relate to specific problems or surveys may be required. The necessary instructions regarding the preparation of such reports must be added by the Specification Writer as appropriate.

3.12.2 Civil, Site Planning and Layout

3.12.3 Water, Wastewater, and Solid Waste Systems

3.12.4 Architectural/Interior Design

3.12.5 Structural

3.12.6 Force Protection Design Procedures for the Protection of United States Forces

3.12.7 Fire Protection and Life Safety

3.12.8 Heating, Ventilating, and Air Conditioning

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- 3.12.9 Plumbing
- 3.12.10 Special Mechanical Systems and Equipment
- 3.12.11 Electrical
- 3.12.12 Power Generation
- 3.12.13 Power Transmission and Distribution
- 3.12.14 Communications
- 3.12.15 Corrosion Prevention and Control
- 3.12.16 Renovation Design
- 3.12.17 Accident Prevention and Safety
- 3.13 SUBMITTAL OF CONTRACTOR FURNISHED DESIGN DRAWINGS
- 3.13.1 Geo-technical
- 3.13.2 Civil, Site Planning and Layout
- 3.13.3 Water, Wastewater, and Solid Waste Systems
- 3.13.4 Architectural/Interior Design
- 3.13.5 Structural
- 3.13.6 Force Protection Design Procedures for the Protection of
United States Forces
- 3.13.7 Fire Protection and Life Safety
- 3.13.8 Heating, Ventilating, and Air Conditioning
- 3.13.9 Plumbing
- 3.13.10 Special Mechanical Systems and Equipment
- 3.13.11 Electrical
- 3.13.12 Power Generation
- 3.13.13 Power Transmission and Distribution
- 3.13.14 Communications
- 3.13.15 Corrosion Prevention and Control
- 3.13.16 Renovation Design
- 3.13.17 Accident Prevention and Safety

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3.14 GOVERNMENT APPROVED CONSTRUCTION SUBMITTALS (Required During Construction)

3.14.1 General

Since this contract requires that the drawings and specifications specify specific proprietary materials, equipment, systems, and patented processes by trade name, make, or catalog number, it is anticipated that construction shop drawings will primarily be limited to testing, construction plans (e.g., Contractor Quality Control, Accident Prevention, Resident Management System, Area Use etc), schedules (Project Schedule/Network Analysis), certificates of compliance, reports, records/statements and variations.

3.14.1.1 Variations

After design submittals have been reviewed and cleared for construction by the Contracting Officer, no submittal for the purpose of substituting materials, equipment, systems, and patented processes will be considered by the Government unless submitted in accordance with the paragraph entitled VARIATIONS.

3.14.1.2 Additional Shop Drawings and Submittals

In accordance with the paragraph entitled DESIGN DISCREPANCIES, the Government may request the Design-Build Contractor to provide additional shop drawing and submittal type data subsequent to completion of the design.

3.14.2 Incomplete Design

The Design-Build Contractor shall not use construction submittals as a means to supplant and/or supplement an incomplete design effort.

3.14.3 Government Approval of Construction Submittals

The approval of construction submittals by the Contracting Officer shall not be construed as a complete check, but will indicate only that the general method of design construction, materials, detailing and other information are satisfactory. Approval will not relieve the Design-Build Contractor of the responsibility for any error which may exist, as it is the sole responsibility of the Design-Build Contractor to certify that each submittal has been reviewed in detail and is in strict conformance with all the contract documents and design criteria referenced therein.

Virtually all design related construction submittals can and must be incorporated directly into the design specifications and drawings prepared by the Design-Build Contractor. Since the Design-Build Contractor has sole responsibility for the design, procurement, and construction, impediments do not exist which would impair his ability to specifically identify what is being furnished to the Government prior to the start of construction. Generic/non-proprietary specifications are indicative of an incomplete design effort and as such must be rejected as unacceptable

3.14.4 Submittals

Submittals (other than shop drawings) shall be limited to items such as Plans (e.g., Quality Control Plan, Accident Prevention Plan, Area Use Plan etc.), Certificates of Compliance, Installation Instructions, Manufacturer's Catalog Data, Descriptive Literature/Illustrations, Factory and Field Test Reports, Performance and Operational Test Data Reports, Records, Operation and Maintenance Manuals, and required variations.

3.14.5 Government Review

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Upon completion of review of construction submittals requiring Government approval, the submittals will be identified as having received approval by being so stamped and dated. (2) copies of the submittal will be retained by the Contracting Officer and one (1) copy of the submittal will be returned to the Design-Build Contractor.

3.15 FOR INFORMATION ONLY SUBMITTALS

These submittals shall be checked, stamped, signed and dated by the Design-Build Contractor's Quality Control Engineer, certifying that such submittal complies with the contract requirements. All Contractor submittals shall be subject to review by the Government at any time during the course of the contract. Any Contractor submittal found to contain errors or omissions shall be resubmitted as one requiring "approval". No adjustment for time or money will be allowed for corrections required as a result of noncompliance with plans or specifications. Normally submittals for information only will not be returned. Approval of the Contracting Officer is not required on information only submittals. These submittals will be used for information purposes. The Government reserves the right to require the Design-Build Contractor to resubmit any item found not to comply with the contract. This does not relieve the Design-Build Contractor from the obligation to furnish material conforming to the plans and specifications and will not prevent the Contracting Officer from requiring removal and replacement if nonconforming material is incorporated in the work.

3.16 ATTACHMENTS

The following attachments form an integral part of this specification:

ENG FORM 4025 - Transmittal of Shop Drawings, Equipment Data, Material Samples, or Manufacturer's Certificate of Compliance (2 pages)

TAC FORM 122-E - Contractor Furnished Design Documents Submittal Register

ENG FORM 4288 - Submittal Register

AED projects:

Figure 1 - sheet/number description; AED title block

Figure 2 - A-E logo/designed by/submitted by; AED title block

Figure 3 - revision block; AED title block

Figure 4 - Finished Format Size

ATTACHMENT A

Submittal Distribution and Quantities for 65%, 100% and any submittals and resubmittals in between

General: The documents which the Contractor shall submit to the Government for each submittal are listed and generally described in preceding paragraphs in this Section.

Activity and Address	Drawing Size [Full Size] (Half Size)	Design Analyses , Calcs, & Specs	Constructio n Cost Estimate	CD-ROM (PDF & DWG)	-	Interior Design Submittal
USACE, AED Headquarter - Kabul	[2_HALF]	[2]	[2]	[3_CD]	[0]	[0]
Resident Field Office	[1_HALF]	[1]	[2]	[2_CD]	[0]	[0]

Submittal Distribution and Quantities for Final Design

Activity and Address	Drawing Size [Full Size] (Half Size)	Design Analyses , Calcs, & Specs	Constructio n Cost Estimate	CD-ROM (PDF & DWG)	-	Interior Design Submittal
USACE, AED Headquarter - Kabul	[2_HALF]	[2]	[2]	[2_CD]	[0]	[0]
Resident Field Office	[1_FULL] [1_HALF]	[2]	[2]	[2_CD]	[0]	[0]

Mailing of Design Submittals

Mail or delivery all design submittals to the Government during design and construction, using an overnight mailing service. The submittals shall be mailed or delivered to the USACE, AED Headquarters at the following address and to the **Resident Field Office (To Be Determined at a later Date)**

(a) DHL, FEDEX, UPS or any other courier service:

U.S. Army Corps of Engineers
Afghanistan Engineer District
House # 1, St. #1 West
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West Wazir Akbar High School
Behind Amani High School
Kabul, Afghanistan
Attn.: Engineering Office

(b) U.S. Postal Service:
USACE, AED,
ATTN: QALAA House
APO AE 09356
Attn: Engineering Office

Each design submittal shall have a transmittal letter accompanying it indicating the date, design percentage, type of submittal, list of items submitted, transmittal number and point of contact with telephone number.

AS-BUILT DOCUMENTS

Provide as-built Full-size drawings and specifications in accordance with Section 01780, CONTRACT CLOSEOUT.

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ATTACHMENT B

NOT USED

- End of Section –

ATTACHMENT C

TRACKING COMMENTS IN DRCHECKS

1. GENERAL

Throughout the design process, the DB Contractor shall enter, track, and back-check comments using the DrChecks system. Designers of Record shall annotate comments timely and specifically to indicate exactly what action will be taken or why the action is not required. Comments considered critical by the conference participants shall be flagged as such.

2. DRCHECKS REVIEW COMMENTS

The DB Contractor shall monitor DrChecks to assure all comments are annotated and agreed to by the designers and reviewers prior to the next submittal. The DrChecks comments and responses shall be printed and included in the design analysis for record.

Conference participants (reviewers) will expect coordination between Design Analysis calculations and the submitted design. Reviewers will also focus on the design submittal's satisfaction of the contract requirements.

The Designers of Record shall answer each comment in DrChecks with a formal response prior to the next submittal, clearly indicating what action will be taken and what drawing/spec will change. Designers of Record are encouraged to directly contact reviewers to discuss and agree to the formal comment responses rather than relying only on DrChecks and review meetings to discuss comments. With the next design conference, reviewers will back-check answers to the comments against the submittal, in addition to reviewing additional design work.

Comments that, in the DB Contractor's opinion, require effort outside the scope of the contract shall be clearly indicated as such in DrChecks. The DB Contractor shall not proceed with work outside the contract until a modification to the contract is properly executed, if one is necessary.

3. DRCHECKS INITIAL ACCOUNT SET-UP

To initialize an office's use of DrChecks, choose a contact person within the office to call the DrChecks Help Desk at 800-428-HELP, M-F, 8AM-5PM, Central time. This POC will be given an office password to distribute to others in the office. Individuals can then go to the hyperlink at {<http://www.projnet.org>} and register as a first time user. Upon registration, each user will be given a personal password to the DrChecks system.

Once the office and individuals are registered, the COE's project manager or lead reviewer will assign the individuals and/or offices to the specific project for review. At this point, persons assigned can make comments, annotate comments, and close comments, depending on their particular assignment.

4. DRCHECKS REVIEWER ROLE

The DB Contractor shall take the role of the reviewer to enter comments into the DrChecks system that result from each design conference. To enter comments:

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- 4.1. Log into DrChecks.
- 4.2. Click on the appropriate project.
- 4.3. Click on the appropriate review conference. An Add comment screen will appear.
- 4.4. Select or fill out the appropriate sections (particularly comment discipline and type of document for sorting) of the comment form and enter the comment in the space provided.
- 4.5. Click the Add Comment button. The comment will be added to the database and a fresh screen will appear for the next comment you have.
- 4.6. Once comments are all entered, exit DrChecks by choosing "My Account" and then Logout.

5. DRCHECKS COMMENT EVALUATION

The role of the designers of record is to evaluate and respond to the comments entered by the DB Contractor. To respond to comments:

- 5.1. Log into DrChecks.
- 5.2. Click on the appropriate project.
- 5.3. Under "Evaluate" click on the number under "Pending".
- 5.4. Locate the comments that require your evaluation. (Note: If you know the comment number you can use the Quick Pick window on your home page in DrChecks; enter the number and click on go.)
- 5.5. Select the appropriate evaluation (concur, non-concur, for information only, or check and resolve) and add the response.
- 5.6. Click on the Add button. The evaluation will be added to the database and a fresh screen will appear with the next comment.
- 5.7. Once evaluations are all entered, exit DrChecks by choosing "My Account" and then Logout.

6. DRCHECKS BACK-CHECK

At the following design conference, participants will back-check comment annotations against newly presented documents to verify that the designers' responses are acceptable and completed. The DB Contractor shall enter additional back-check comments, as necessary or close those that are resolved as a result of the design conferences:

- 6.1. Log into DrChecks.
- 6.2. Click on the appropriate project.
- 6.3. Under "My Backcheck" click on the number under "Pending".

- 6.4. If you agree with the designer's response select "Close Comment" and add a closing response if desired.
- 6.5. If you do not agree with the designer's response or the submittal does not reflect the response given, select "Issue Open", enter additional information.
- 6.6. Click on the Add button. The back-check will be added to the database and a fresh screen will appear with the next comment.
- 6.7. Once back-checks are all entered, exit DrChecks by choosing "My Account" and then Logout. The design is completed and final when there are no pending comments to be evaluated and there are no pending or open comments under back-check.